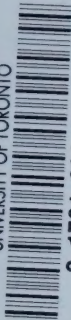


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A

of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 59 No. 7
July/Juillet 1993

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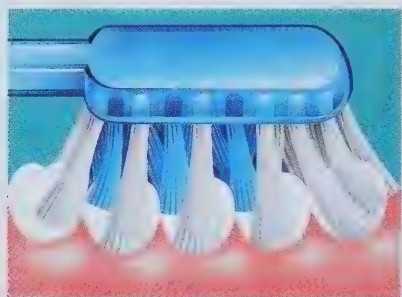
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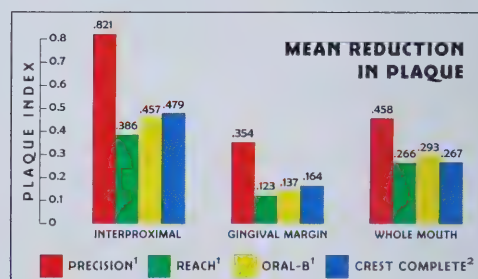
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1. Sharma, N. et al., BioSci Research, Canada, Journal of Clinical Dentistry, Vol. III, Suppl C, C13 – C20, 1992. 2. Balanyk T.E. et al., Journal of Clinical Dentistry, Vol. IV, Suppl D: D8 – D12, 1993. (Plaque Index values for Precision: Interproximal = 0.763; Gingival Margin = 0.380; Whole Mouth = 0.412).

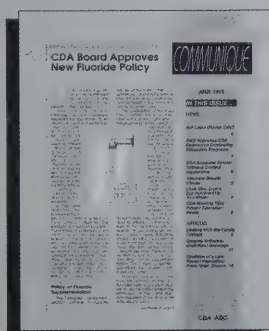
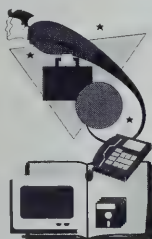


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L'ASSOCIATION DENTAIRE CANADIENNE

July/Juillet 1993
Vol. 59, No. 7



CDA Members, look for your next
Communiqué in the September
issue of the Journal.

Interview

589

Lee Madison Retires: A New Lease on Life?

P. Ralph Crawford, BA, DMD

Specialty Features

592

The Whole Truth or Nothing?, A Tale of Misinformed Consent

Derek W. Jones, B.Sc., PhD, FRSC(U.K.), FADM

Infection Control

599

A Decade of AIDS, and Its Implications For Canadian Dentistry

J. Hardie, BDS, M.Sc., FRCD(C)

Scientific

607

Oral Malodor – A Review

Louis Z.G. Touyz, BDS, M.Sc. (Dent.), M.Dent. (POM)

615

Vital Fluorescence: A New Measure of Peri-odontal Treatment Effect

S. Gelskey, CDH, BS, MPH
M. Brex, BS, DDS, MS, PhD
L. Netuschil, PhD et al.

619

La Minocycline

Paul D'Aoust, B.Sc.
Gaëtan Noreau
Céline Rochette, DMD et al.

Departments

566

Announcements

569

Editorial

571

President's Column

573

News Update

576

Letters to the Editor

577

Book Reviews

578

Library

579

Dental Meeting '93

583

**Practice Management
& Success**

585

CDSPI Reports

611

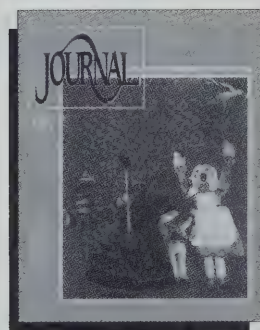
CDA Dental Meeting

625

CDA Access Ads

630

Advertisers' Index



Cover: The opening ceremonies at CDA's 1993 Annual Dental Meeting featured the Famous People Players (Photograph by Chris Nicholls).

JOURNAL

July/
Juillet
1993
Vol. 59
No. 7

565

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

August 20-21, 1993
4th annual Meeting
Atlantic Provinces AGD
 Moncton, New Brunswick
 Dr. Jack Thompson:
 (506) 847-4243

October 2-8, 1994
Joint CDA/FDI
Annual Dental Meeting
 Vancouver, BC
 (613) 523-1770,

August/Août 1993

August 22-27: 7th World Congress on Pain, sponsored by the International Association for the Study of Pain, is being held in Paris, France. For more information, contact: International Association for the Study of Pain, 909 NE 43rd St., Suite 306, Seattle, WA 98105. Tel: (206) 547-6409.

August 25-29: Canadian Academy of Endodontics 29th Annual Meeting being held at the Deerhurst Resort, in Huntsville, Ontario. For details, contact: Dr. W.B. Wiseman at (705) 737-4700.

September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

September 21-23: Syrian Dental Association 4th Scientific Congress will be held in Damascus, Syria. For details, write: Dr. Rashid

Jhara, President, Syrian Dental Association, Jisr Al Abiad, Str, Egypt No. 52 PO Box (11104), Damascus, Syria.

October/Octobre 1993

October 1-2: 12ème Symposium International de Céramique in Paris, France. The 12th Symposium is being sponsored by Quintessence publishing (Germany, USA) and Group CdP (France). For information and registration, contact: Group CdP, 77 rue de Richelieu, 75002 Paris.

October 1-3: Canadian Association of Dental Consultants Annual Workshop will be held at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, PO Box 2200, Halifax, N.S. B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry being held at the University of Toronto, in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write the CDA, 1815 Alta Vista Dr., Ottawa, Ont. K1G 3Y6.

October 29-30: The Canadian Academy of Restorative Dentistry and Prosthodontics being held at the Halifax Sheraton Hotel in Halifax, Nova Scotia. For information or registration contact: Dr. Michael Roda, 1545 Birmingham St., Halifax, N.S. B3J 2J6. Tel: (902) 422-5957, fax: (902) 492-4426.

November/Novembre 1993

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, being

held in San Francisco, California. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference being held at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

February/Février 1994

February 16-20: Jamaica Dental Association 30th National Dental Convention is being held at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

June/Juin 1994

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) will be held at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046. La Habana, Cuba.

June 25-July 1: 10th Congress of the International Association of Dento-Maxillo-Facial Radiology to be held in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMR, c/o Korea Convention Services Ltd. SL Youngdong PO Box 305, Seoul 135-603, Korea.

JOURNAL

July/
juillet
1993
Vol. 59
No. 7

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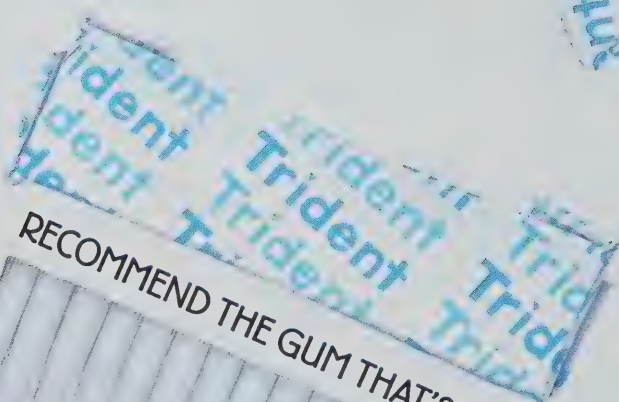
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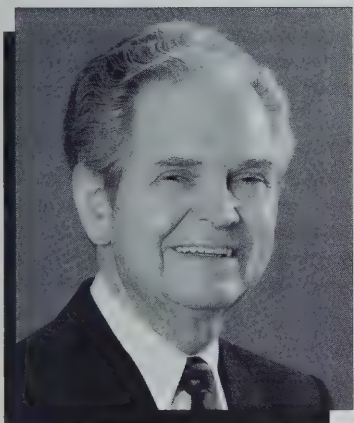
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EDITORIAL

A National Laughter Day: Are You Serious?



Dr. P. Ralph Crawford,
Editor

Last month, two newspaper stories caught my eye. One was about the mayors of Ottawa and Gloucester, Ontario, declaring June 21 National Laughter Day. The other concerned using the justice system to penalize students caught cheating on their exams.

In the first story, a retirement home administrator found humor to be excellent therapy. Surveys showed that as many as 60 per cent of the seniors in the administrator's care suffered from severe depression at any one time. The conclusion was that if laughter worked to alleviate depression in one institution, why not make the therapy universal and bring it to the nation's attention with a National Laughter Day.

The other article referred to a Boston College psychologist who studied the reactions of 125 people asked to imagine that they were part of a disciplinary committee deciding the cases of students accused of cheating. All 125 people agreed that the evidence substantiated

guilty verdicts. Invariably, however, they decreed a lesser penalty when they were shown a photograph of a smiling accused versus one wearing a scowl. You can try this smiling tactic with your next speeding ticket – let us know how you make out.

The two stories took my mind back a number of years to a book entitled *Anatomy of an Illness*, by Norman Cousins. Cousins was senior editor of *Saturday Review* for 35 years and went on to be a lecturer at the School of Medicine at the University of Southern California in Los Angeles, and consulting editor of *Man & Medicine*, published at the College of Physicians and Surgeons, Columbia University.

Cousins, then in his mid-fifties, had mysteriously contracted a type of collagen disease that virtually crippled him and racked his body with unceasing pain. When all the efforts of medical science failed to bring him relief, Cousins decided to treat himself with positive thinking.

To help stimulate a mental image of well-being he turned to the humor and laughter he found in old movies and books. Amazingly, he found that 10 minutes of genuine belly laughter brought on by watching an old Marx brothers movie produced an anesthetic effect that gave at least two hours of pain-free sleep – something he had not experienced in previous months. While never abandoning good medical principles, and with the aid of a long-time friend and physician, he continued his humor self-therapy until he was sufficiently cured to return to full duties.

The world has always known that laughter is better than tears and a smile profits more than a frown. Anatomically, we even save energy – it requires twice as many muscles to frown than to smile. Canada's Sir William Osler, considered the greatest clinician in the world at the turn of the century, referred to laughter as the "music of life." To Osler, laughter was an integral portion of what the ancients called *vis medicatrix naturae* – self healing.

In his *Critique of Pure Reason*, Immanuel Kant wrote that laughter produces a "feeling of health through the furtherance of the vital bodily processes, the affection that moves the intestines and the diaphragms; in a word, the feeling of health that makes up the gratification felt by us; so that we can thus reach the body through the soul and use the latter as the physician of the former."

And Cousins points out in his book that even Sigmund Freud was not singularly confined to the mind's malfunctioning or torments. Freud believed that mirth was a highly useful way of counteracting nervous tension, and that humor could be used as effective therapy. Blessed with parents who considered love, joy and laughter – as opposed to ill-boding and scowling – to be life's invaluable assets, I discovered early that the returns of a smile and a kind word are immeasurable. My Irish mother called it the golden pleasures of a happy heart. It can be seen in something as simple as boarding a plane. The next time the cabin attendant says, "How are you today," respond with a smile and say, "Super! I think this is one of the best days in my life." Then watch the attendant's face light up and smile back. It never fails. A smile is contagious.

Our dental offices are stressful places that most patients would choose to avoid if given a choice. Over a period of many years, I have never witnessed an occasion when a spontaneous smile, a bit of humor or a gracious gesture failed to lighten a patient's burden.

Yes, I'm all for a National Laughter Day – in fact I'm seriously thinking of advocating that the idea be applied 365 days a year. As Ella Wheeler Wilcox (1855-1919) said: "Laugh and the world laughs with you; Weep and you weep alone; For the sad old earth must borrow its mirth, But has trouble enough of its own."

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

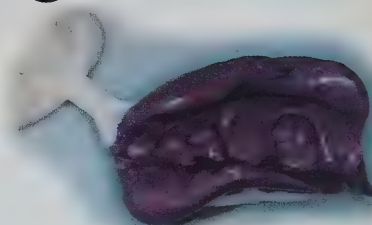
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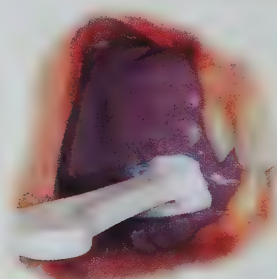
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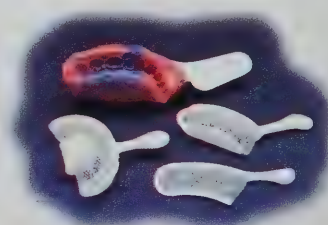
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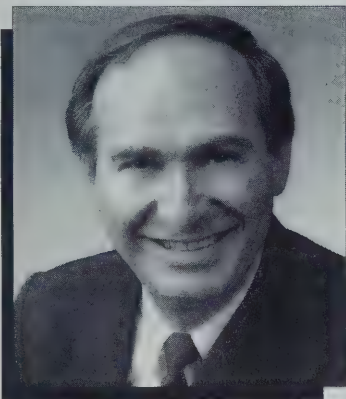
1. "A Comparison of the Accuracy of Two Articulating Methods: The Double-arch Impression Technique vs hand-articulated Full-arch Casts", William A. Gregory, Mitchell D. Kaplan, Quintessence International, Vol. 19, No. 9, 1988. 2. "Dual-arch and Custom Tray Impression Accuracy", Richard D. Davis, Richard S. Schwartz, American Journal of Dentistry, Vol. 4, No. 2, April 1991. 3. "Accuracy of Second Pour Casts Using Dual-arch Impressions", Richard S. Schwartz, Richard D. Davis, American Journal of Dentistry, Vol. 5, No. 4, August 1992. 4. "Marginal Adaptation of Castings Made with Dual-arch and Custom Trays", Richard Davis, Richard Schwartz, Thomas Hilton, American Journal of Dentistry, Vol. 5, No. 5, October 1992. Triple Tray and Premier are registered trademarks of Premier Dental Products Co.

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PRESIDENT'S COLUMN

The Rites of Spring



Dr. Bernard Dolansky,
President

When Geoffrey Chaucer wrote the first line of his prologue to the *Canterbury Tales*, about eight hundred years ago, he could not have known that dental meetings – as well as April showers – would be the harbingers of spring in late 20th century Canada. If he had, perhaps his famous quote would have read: “Whan that Aprille with his shoures sote The droghte of Marche hath perced to the rote Than longen folkse (switche as dentistes) do go on pilgrimages.”

Starting with the B.C. dental meeting in March (spring, as most of us know, comes early on the West Coast) to Saskatchewan's meeting in June, many provincial dental organizations hold their annual meetings shortly after the cold and snow of winter have disappeared.

Even CDA got into the act this year. In conjunction with ODA, we held our Annual Dental Meeting during the last week of April, some five months earlier than usual. Whether it was the early date or the

exceptional program, the event was a smashing success. It marked the first time in Canada that over 3,400 dentists (out of a total registration of over 9,000) have come together at one time and place. And dentists from across Canada are still thanking us for the wonderful job accomplished by our convention committee and staff.

In many ways, the ritual of attending spring dental meetings across Canada has been one of the best and most interesting aspects of my year as CDA's president. It was an opportunity to broaden my perspectives, learn, and above all, meet and exchange views with colleagues.

As one would expect, many of the dental issues and concerns discussed at the provincial level are shared by all dentists, regardless of where they practise. Topics such as infection control guidelines, silver amalgam use, the dynamics of the dental team, and many other issues are regularly discussed, for example. But we all recognize that while it is valuable to debate these issues at the provincial level, we must also view them from a national perspective if we are to come up with credible solutions.

For me, the most important and enjoyable part of any visit to a provincial meeting is mingling with my colleagues, discussing issues and, occasionally, coming up with solutions. This spring, I have had the opportunity to attend provincial dental meetings right across Canada. The schedule was hectic at times, but it was worth it.

During my pilgrimages from coast to coast, I also found time to write about a couple of controversial issues in this column, including fees (May) and insurance fraud (June). I am impressed by the support that many members have expressed for the positions expressed in my column. It is evident from my travels that this is an overwhelmingly aware, savvy profession, made up of men and women who render good, professional care to their patients each and every day.

It's a tough job, but it's being done very well by dentists right across Canada – as it should be.

At the same time, the leaders of our associations and licensing bodies also have to deal with the many problems that confront our profession as a whole. That, after all, makes up a large part of the responsibilities that our elected officials assume when they take office. But this can be dangerous at times, as I learned during my travels this year.

What I discovered, simply put, is this: We must not get overwhelmed by the problems that we face, or led to believe that this world is made up of nothing but problems. There's more to life than problems, and certainly more to our profession. This lesson is an important one for every dentist practising today, regardless of whether he or she holds a position of responsibility in an association or licensing body.

We must never forget that, by and large, this profession of ours is a good one. Thanks to the foresight of past and present leaders, dentistry's coffers are full of priceless assets. These are resources that have nothing to do with money and, in fact, that money cannot buy. I am referring to the structure and policies that dentists have established to govern our profession, which, relative to other professions, allow dentists to exercise professional independence and judgement while continuing to set a fair value on their services.

Through our organizations, this profession will continue to wrestle with the problems that face us as dentists, particularly in these tough economic times. But all of us should remember, even if we don't have the opportunity to undertake a spring pilgrimage, to stop and count our blessings.

*Bernard Dolansky, BA, DDS, MS
President of the Canadian
Dental Association*

JOURNAL

July/
Juillet
1993
Vol. 59
No. 7



“IN PURSUIT OF EXCELLENCE”



**Faculty of Dentistry, University of Toronto
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Saturday October 2, 1993

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& Equipment</p> <p>2) 11:00 a.m. to 1:00 p.m.
Lecture on Implants by
Dr. Robert Pilliar &
Dr. George Zarb
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Coffee)</p> <p>3) 1:30 p.m. to 4:00 p.m.
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Tickets to Varsity Game
(Or Just Go Shopping)</p> | <p>4) 6:30 p.m. to 12:00 midnight
Alumni of Distinction
Award Evening at Park
Plaza Hotel (Avenue Road
and Bloor)</p> <ul style="list-style-type: none">- Cocktails & Hors d'Oeuvres- Dinner and Dancing- Alumni of Distinction Medals To:
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Dr. Rowland Haryett (Alta.)
Dr. Bruno Martinello (Alta.)
Dr. Rod Moran (Ont.)
Dr. Kevin Roach (Ont.)
Dr. Dennis C. Smith
(Professor Emeritus)
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(Professor Emeritus)-The Class of 6T7 |
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NEWS UPDATE

Dr. George Zarb Receives IADR Distinguished Scientist Award



Dr. George Zarb of Toronto (left) is presented the 1993 IADR Distinguished Scientist Award (for research in prosthodontics and implant dentistry) by IADR president Dr. John Greene.

Dr. George Zarb, professor and chairman of prosthodontics at the University of Toronto, was awarded the 1993 International Association for Dental Research (IADR) Distinguished Scientist Award for his research in prosthodontics and implant dentistry.

The award was presented to Dr. Zarb at a joint meeting of the International, the Canadian and the American associations for dental research, held March 10-14 in Chicago. ■

CDC Reports 6th Acer Patient Diagnosed With HIV

According to a May 6 news release issued by the Centers for Disease Control (CDC), a sixth patient of Florida dentist Dr. David Acer has contracted the human immunodeficiency virus (HIV).

The first alleged HIV transmission by the late Dr. Acer to a patient was reported in July 1990. Despite exhaustive investigations of Dr. Acer's office routine, no definitive route of HIV infection has ever been discovered.

"We don't know how transmission occurred," said Dr. Donald Marianos, the director of CDC's division of oral health. "We probably won't ever know. The more patients we identify, the more difficult any scenario becomes for explaining how they were infected."

Dr. Acer died in September 1990.

CDC's *Morbidity and Mortality Weekly Report (MMWR)* reported that the sixth HIV-infected patient is a female teenager. She was found to have the HIV virus during a routine examination following her application to serve in the U.S. military. She was Dr. Acer's patient from 1987 to 1989. Her dental visits involved routine examinations, radiographs, prophylaxis and restorative fillings under local anesthesia, unlike the other five patients, who all reported undergoing surgery or endodontic treatment.

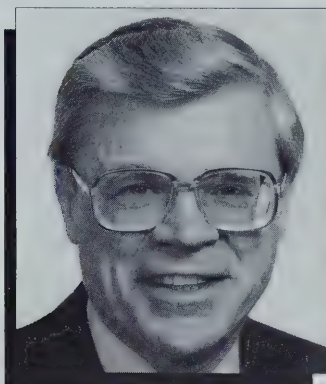
After an extensive investigation with the patient and her family, CDC were unable to determine the source of the HIV exposure. The patient admitted to having six sexual partners — five tested HIV negative and one was not located.

In a synopsis that appeared in *MMWR*, CDC emphasized: "No other instance of HIV transmission from health care worker to patient has been documented in investigations of 19,000 patients of 57 other infected health care workers. The risk of HIV transmission from an infected health care worker to patient during invasive procedures is small." ■

Dr. Dennis Smith Retires

Dr. Dennis Smith, professor of biomaterials and head of the biomaterials department at the University of Toronto, officially retired from his post on June 30 — but not without further recognition of his contributions to the field of biomaterials.

On April 13, the University of Toronto's Alumni Association presented Dr. Smith with the Faculty



Dr. Dennis Smith

Award, which recognizes academic excellence and service to the university and community. He received an honorary doctor of science degree from McGill University on May 25, 1993, and on May 31 he was the recipient of the Medical Device Manufacturers of Canada (MEDEC) Award for Medical Achievement. In addition, an article which appeared in the May 1993 issue of the *Journal* (Vol. 59, No. 5, pp. 433-434) outlines Dr. Smith's achievement in receiving Ontario's Trillium Award.

Recently, at a meeting of CDA's dental materials and devices committee, of which he is a long standing member, Dr. Smith was asked if the time had come to sit and do nothing. He responded quickly with a twinkle in his eye, "Good Heavens, how could I think of sitting and doing nothing. I intend to continue my research and like activities." The *Journal* never doubted him for a moment. ■

Canadians Prominent at Special Care Meet- ing

Canadians are not only visible but are making significant contributions as members of the Federation of Special Care Organizations (FSCO).

FSCO held its fifth National Conference in Chicago last April to discuss special care issues in dentistry. The federation is composed of the American Association of

JOURNAL

July/
juillet
1993
Vol. 59
No. 7

Hospital Dentists (AAHD), the American Society for Geriatric Dentistry (ASGD) and the Academy of Dentistry for the Handicapped (ADH).

Canadian brothers Drs. Manny and Clive Friedman of London, Ontario, both members of the ADH, participated in a separate session that discussed patients in long-term care facilities and the neglect/abuse implications for the dental profession.

In addition, Dr. Mike Sigal, of Toronto, Ontario, serves as an ADH board member; Dr. Jeffrey Richmond, of London, Ontario, is an editor of the ADH newsletter, *Interface*, and Dr. Ralph Crawford, of Ottawa, Ontario (the editor of the *Journal*), recently retired after serving six years as an ASGD director. ■

Public Health Dentists Elect New President

Dr. Peter Cooney of Winnipeg was elected president of the Canadian Society of Public Health Dentists during its recent annual meeting in Toronto.

Dr. Cooney received his dental degree in Ireland and worked in private practice in London, England, for two and a half years. In Canada, he successfully completed his licentiate in dental medicine in Manitoba, then spent four and half years in private practice in Newfoundland.

He received a dental diploma in public health at the University of Toronto, and subsequently served six years as the dental director for the province of Manitoba. Currently he is the regional dental officer for Health and Welfare Canada, Medical Service, Manitoba region.

Others serving on the Canadian Society of Public Health Dentists' executive are: Dr. Neil Farrell, London, Ontario, past-president; Dr. Gordon Thompson, Edmonton, Alberta, president-elect; and Dr. Euan Swan, Ottawa, Ontario, secretary-treasurer. ■

CDA Museum

Memorabilia from dentistry's rich history are on display in the

"WHAT'S IT?"

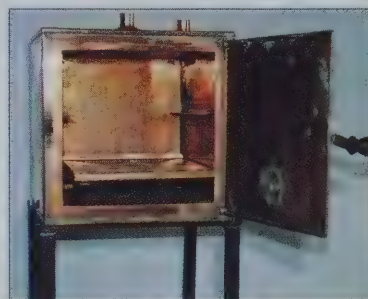
Believe it or not, we know what this month's "What's It" is. In the 1900 Ingram and Bell catalogue, it was advertised as a sterilizer. What we don't know is how it worked.

The device is constructed in a double-boiler fashion of copper sheet. With the stand, it is about 25 centimetres high and 14 centimetres across. We believe that a graduated glass tube was held inset above the stop-cock to indicate the height of water. There is evidence from the bottom that a burner was used to heat the apparatus.

What puzzles us are the pipes on the top. The rear pipe enters into the double boiler section and the centre tube is "through and through."

You tell us. How did it work?

If you can help, please contact Journal Edr. Ralph Crawford, at 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. ■



library of the Canadian Dental Association in Ottawa.

Donations of museum-quality dental artifacts are always welcome. Tax receipts will be issued, in some cases, for quality donations.



Thank You

The Museum wishes to thank the following individuals for their recent donations: Dr. Peter Markle, Scarborough, Ontario, Clev-Dent separators and Trubyte bite rim for-

mer; Dr. Brock Love, Winnipeg, Manitoba, 1920's Hanau articulator; Dr. Don Lauriente, Vancouver, B.C., an amazing assortment of dental paraphernalia — some of which we have yet to identify; Dr. Charles Daley, Grimsby, Ontario, old text books and a 1920's U. of T. dental crest; Dr. Clifford Hickland, Kenmore, Ontario, 1937-1952 Veterans Affairs' regulations and dental student notes from the 1940s; Ms. Elizabeth Fitzpatrick, Mount Pearl, Newfoundland, for the trial size of tooth paste that cost all of one cent to mail in 1951; and the West Central Community Health Centres in Toronto for the Trubyte mould guides. We also want to thank the anonymous donor who mysteriously left an S.S. White foot pedal dental engine and a box of swaging dies on our door step.

If you have anything dental and antique and wish to donate it to the museum, please contact Dr. Ralph Crawford, CDA headquarters, Ottawa, 1-800-267-6354. ■

CFDE Announces Program Support for 1993

At its annual general meeting in May, the Canadian Fund for Dental Education (CFDE) trustees approved \$248,892 in awards to support dental education, research and awareness programs in 1993.

Among the programs receiving support are:

- a total of \$15,000 representing individual unrestricted grants of \$1,500, which are awarded annually to each of the 10 dental faculties
- a total of \$20,000 for individual annual undergraduate grants of \$1,000, two of which are awarded to each of the 10 dental schools to support scholarships, awards or prizes to two undergraduate dental students
- a total of \$9,000 granted from the Dr. Nicholas A. Mancini, the Dr. G.W. Barrett, and the Dr. Allan Chantler endowment funds to assist 11 dental and/or dental hygiene students who are in financial difficulty
- an allocation of \$11,000 made to the 1993 CDA Students' Conference
- a grant of \$6,000 to the 1993 Canadian Dental Hygienists' Association's "North American Research Conference." Subject areas to be addressed include advances in clinical techniques and technology, disease prevention/health promotion, and theory development and testing.
- \$16,700 to support the "Development of Multimedia Courseware: the Masticatory Muscles" project at the University of Montreal. This project is another interactive/multimedia teaching tool with chapters on the infrahyoid, suprahyoid and masticatory muscle groups. A group of students at the University of Montreal dental school has been involved in the development of interactive multimedia courseware for dental education since 1986.
- the 1993 "Quality Assurance Workshop" at the University of Toronto received \$5,000. Participants will review the ele-



CFDE Board of Trustees: back row, left to right; Mr. Lee Maddison, Toronto, Ontario; Dr. Gregory Baird, Halifax, Nova Scotia; Mr. Arthur Zwingenberger, Toronto, Ontario; Dr. François Bourassa, Regina, Saskatchewan; Dr. Donald O'Connor, Ottawa, Ontario; Dr. Arnold Steinbart, Prince George, B.C.; Dr. David Singer, Winnipeg, Manitoba; Dr. Robert Dupont, Montreal, Quebec. Seated, left to right, Ms Bev. Chene, CFDE administrative assistant; Dr. Gordon Thompson, Edmonton, Alberta, (Chairman); Ms Julie Hentschel, CFDE fund administrator.

ments of quality assurance in health care and learn from other jurisdictions and disciplines in developing and implementing quality assurance.

- the CFDE Murray McDonald Memorial Lecture at the April 1993 ODA/CDA Annual Dental Meeting in Toronto, which featured a presentation by circumnavigators Fiona McCall and Paul Howard entitled "The World was Our Challenge."
- a total of \$31,455 was allocated for teacher/researcher training fellowships, including three Warner-Lambert supported fellowships of \$2,500 each. In all, seven dentists, three dental hygiene teachers and one dental assisting teacher received fellowships in 1993. The Henry Thornton Award of \$1,000 offered by Dentsply Canada was awarded to the most meritorious applicant.
- \$10,000 was awarded, through the support of Wrigley Canada, to the Wrigley Research Awards Program in 1993. Research programs at the universities of British Columbia, Manitoba and Dalhousie were granted awards this year.
- with support from CREST/Procter & Gamble, the 1993 CDA Teaching Conference on "Hospital Dentistry" received \$15,000. The conference will provide a forum for comprehensive discussion on hospital dentistry, including educational and research responsibilities, service commitments and the accreditation process.
- the CFDE/ACFD Summer Teaching/Management Institute was granted \$44,000. The Institute offers an intensive eight-day learning experience designed to provide participants with practical teaching methods that can be directly applied in laboratories, seminars, clinics and lectures.
- the income of \$14,625 from the Dr. Lorne E. MacLachlan Endowment Fund will be divided equally again this year among the dental faculties at Toronto, Western Ontario, McGill and Dalhousie to benefit the prosthodontics departments, according to the terms of the endowment.
- the Royal College of Dentists of Canada (RCDC) Examiners' Workshop was allocated \$5,000. Workshop topics include new developments in dental education, the College's complementary relevance to dental institutions and anticipated new specialty licensing requirements in Canada.



- the Brånemark Cranio-Maxillofacial Rehabilitation Program, established through the support of Nobelpharma Canada, will supply components to assist patients in financial difficulty who require osseointegration treatment. In addition, Nobelpharma has committed \$2,000 annually over the next five years to the Brånemark Cranio-Maxillofacial Rehabilitation Developing Fund, to promote programs in education relating to reconstructive surgery based on the principles of osseointegration.
- The CDA/Dentsply dental students' table clinics will receive \$10,000. This program encourages dental students to pursue original research at the undergraduate level.

CFDE funding for these and other programs is provided primarily by annual donations from the dental profession, associations, business and industry. CFDE depends on this support to provide dental educators and researchers with the necessary funding to promote improvements in oral health.

If you have not already done so, please send your contribution to CFDE today at 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6. Tax receipts are issued for all donations. ■

HELP!

The CDA *Journal* department urgently requires copies of the September 1992 and November 1992 *Journal* to fulfil back order requests. If you can part with your copy, please mail it to Dr. Ralph Crawford, *Journal* Editor, Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6.



LETTERS



Bicycle Safety Helmets

I must protest our association's recent mailing of publicity matter for bicycle safety helmets.

This issue does deserve attention, but then so do civil rights, drug abuse, the ozone layer, global hunger and a host of others. Does it mean, then, that the CDA, our professional body, should commit resources to sundry worthy causes? Surely, No!

We live in a time of financial rollbacks in all sectors. Perhaps, as an organisation, we too should look to curtail our ambitions.

Moreover, this helmet offer recommends one specific manufacturer and smacks of commercial promotion (with prices, by the way, which are not particularly competitive). The practise should be eschewed.

N. Freudman, BDS, DDS
Downsview, Ontario

Editor's Note:

We agree with Dr. Freudman's view that there are numerous causes that deserve our attention — helmet safety just happens to be one of them. In the letter accompanying the material sent to dental offices, Dr. Bernard Dolansky, CDA president, clearly identifies CDA's long-standing commitment to sports safety, mouthguards, face protectors and helmets.

The bicycle helmet safety promotion material recently sent to dentists' offices follows a similar, and very successful, program supported by the Canadian Medical Association and its physician members. It makes ultimate sense that if

more people, particularly children, take the precaution of wearing a helmet during sporting activities, they will be less likely to suffer from head and mouth injuries.

Nor should Dr. Freudman be concerned about committing CDA resources to such causes. The bicycle helmet safety program didn't cost CDA a nickel.

Board Examinations In The U.S.

I read the opinion piece by Dr. J.T. Jastak entitled "Dental Education and Board Examinations in the U.S." (*CDA Journal*, Vol. 59, No. 5, pp. 484, 486) with a certain sense of *déjà vu*. As a Canadian dentist who has just endured the national and state examination process, I can assure all of my fellow practitioners north of the 49th that the author tells it like it is.

The hundreds of hours wasted by dental students in this country (America) in repetitive exercises to pass each exam's "stopper" (the Texas onlay, the Florida typodont preps, or the California denture setup) is a scandal that educators and students alike quietly submit to so that they can be spared the wrath of The Board. It is unfortunate that this archaic system has been perpetuated for this long, however, moves are under way in several areas to reform the system. When the Canadian system of licensure is described to American dentists, by far the most common response is "That's what we should do here!"

When I heard that there were forces at work in Canada whose aim was to attempt to foist this retrogressive and particularly heinous form of restricted interprovincial trade (and its accompanying loss of educational time for our dental graduates) on dentistry, I felt compelled to write. Don't do it at any cost.

Robert S. Roda, DDS
United States

BOOK REVIEWS

Pathophysiology of Head and Neck Musculoskeletal Disorders

Edited by M. Bergamini and S. Prayer Galletti

1990, Karger, New York.

This 200-page book records the proceedings of the sixth convocation of the International College of Cranio-Mandibular Orthopedics. It consists of 25 papers by an even greater number of authors, and includes 67 figures and 17 tables.

The preface provides the reader with a hint of what's to come: "Today we all use EMG routinely for checking our clinical cases with essential data. But our final objective is still the same even though our aim is now more precise: the postural neuromuscular balance of the stomatognathic system as the necessary basis for a harmonic and physiologic function of our apparatus, which, as we know, is the highest located in the postural chain and for this reason dominates on the lower systems and yet is so much conditioned by them!"

In general, the articles are interesting. They represent a wide variety of experience and expertise in

the diagnosis and treatment of "temporomandibular joint disease." Thomas's paper, "The Effect of Fatigue and TENS on the EMG Mean Power Frequency," as well as Jankelson's, "Analysis of Maximal Electromyographic Activity of the Masseter and Anterior Temporalis Muscles in Myocentric and Habitual Centric in Temporomandibular Joint and Musculoskeletal Dysfunction," are more disciplined than the others, many of which make substantial leaps in scientific logic to arrive at their conclusions.

On the broad subject of managing patients with complaints related to the temporomandibular joint region, this book is neither a standard reference text nor a clinical manual for general dentists. It confirms to some extent that there are many more treatments than accurate diagnoses for cranio-mandibular dysfunction.

Reviewed by:
Dr. David Precious
DDS, M.Sc., FRCD(C)
Professor and Chair, department of oral and maxillofacial surgery,
Dalhousie University, Halifax,
Nova Scotia.

Canadian Academy of Restorative Dentistry and Prosthodontics

The Canadian Academy of Restorative Dentistry and Prosthodontics, (formerly C.A.P. and C.A.R.D. which amalgamated in October, 1992), will hold its first annual General Meeting and Scientific Program in Halifax, October 28-30, 1993.

ESSAYISTS

Michael Wise, London, UK
Occlusion/Restorative Dentistry
Van Thompson, Wash., DC
Dental Materials
Chuck MacNeil, San Francisco, CA
TMD Guidelines
Dan MacIntosh, Halifax, NS
Intracoronary castings
Robert Hoar, Halifax, NS
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Our Third Molar Removal package includes these articles:

1. Ader, D.N. and others. Information seeking and interactive videodisc preparation for third molar extraction. *J Oral Maxillofac Surg*, 1992; 50(1):27-31, 32.
2. Carmichael, F.A. and McGowan, D.A. "Incidence of nerve damage following third molar removal: a West of Scotland Oral Surgery Research Group study" [review article]. *Br J Oral Maxillofac Surg*, 1992; 30(2):78-82.
3. Cohen, M.E., Arthur, J.S. and Rodden, J.W. "Patients' retrospective preference for extraction of asymptomatic third molars." *Comm Dent Oral Epidemiol*, 1990; 18(5):260-3.
4. Damm, D.D. and Fantasia, J.E. "Oral surgical complication." *Gen Dent*, 1990; 38(6):410, 478.
5. Falconer, D.T. and Roberts, E.E. "Report of an audit into third molar exodontia." *Br J Oral Maxillofac Surg*, 1992; 30(3):183-5.
6. Fridrich, K.L. and Olson, R.A. "Alveolar osteitis following surgical removal of mandibular third molars." *Anesth Prog*, 1990; 37(1):32-41.
7. Gooris, C.G., Artun, J. and Joondeph, D.R. "Eruption of mandibular third molars after second-molar extractions: a radiographic study." *Am J Orthod Dentofacial Orthop*, 1992; 98(2):161-7.
8. Herpy, A.K. and Goupil, M.T. "A monitoring and evaluation study of third molar surgery complications at a major medical centre." *Mili Med*, 1991; 156(1):10-2.
9. Knutsson, K. and others. "Asymptomatic mandibular third mo-

lars: oral surgeons' judgement of the need for extraction." *J Oral Maxillofac Surg*, 1992; 50(4):329-33.

10. Knutsson, K. and others. "General dental practitioners' evaluation of the need for extraction of asymptomatic mandibular third molars." *Community Dent Oral Epidemiol*, 1992; 20(6):347-50.
11. Kugelberg, C.F. and others. "Periodontal healing after impacted lower third molar surgery in adolescents and adults. A prospective study." *Int J Oral Maxillofac Surg*, 1991; 20(1):18-24.
12. Kugelberg, C.F. "Third molar surgery." *Curr Opin Dent*, 1992; 2:9-16.
13. MacGregor, A.J. "Reduction in morbidity in the surgery of third molar removal." *Dent Update*, 1990; 17(10):411-4.

14. Mercier, P. and Precious, D. "Risks and benefits of removal of impacted third molars. A critical review of the literature." *In J Oral Maxillofac Surg*, 1992; 21(1):17-27.
15. Peterson, L.J. "Rationale for removing impacted teeth: when to extract or not to extract." *JADA*, 1992; 123(7):198-204.
16. Raustia, A.M. and Oikarinen, K.S. "Effect of surgical removal of the mandibular third molars on signs and symptoms of temporomandibular dysfunction: a pilot study." *Cranio*, 1991; 9(4):356-60.
17. Sands, T., Pynn, B.R. and Nenniger, S. "Third molar surgery: current concepts and controversies." Part I & Part II. *Oral Health*, 1993; 83(5):11-17, 19-30.
18. Swanson, A.E. "Incidence of inferior alveolar nerve injury in mandibular third molar surgery." *J Can Dent Assoc*, 1991; 57(4):327-8.
19. Tulloch, J.F., Antczak-Bouckoms, A.A. and Ung, N. "Evaluation of the costs and relative effectiveness of alternative strategies for the removal of mandibular third molars." *Int J Technol Assess Health Care*, 1990; 6(4):505-15.
20. Weisenfeld, M.D. and Kondis, S.L. "Prophylactic removal of impacted third molars, revisited" [review article]. *Gen Dent*, 1991; 39(5): 344-5.

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JOURNAL

July/
juillet
1993
Vol. 59
No. 7

CDA ANNUAL DENTAL MEETING, hosted by ODA

The 1993 CDA Annual Dental Meeting, hosted by ODA, was a historic event. It was the single largest gathering of dental "people" under the CDA/ODA banner in the history of the two associations. Almost 3,500 dentists, 1,750 dental assistants, 800 dental hygienists — plus an additional 3,000 exhibitors, spouses and guests — brought the total attendance to more than 9,000. Everyone had a great time.

And speaking of historical events, never before at a Canadian dental meeting were there more world-recognized lecturers and clinicians. They brought to their audiences the very latest in dental knowledge. Add to this the hundreds of exciting exhibits and all the ingredients were there to please everyone — those from Toronto who came only a few blocks, and those from as far away as the shores of Newfoundland and Vancouver Island.

No meeting ever happens by chance. It is the combined effort of a team of dedicated dental volunteers working untold hours to bring it all together. Each of the 9,000 who walked the exhibits, sat in lecture theatres and revelled at the social events, owes the Convention Committee a thunderous round of applause.



Fig. 3



Fig. 4



Fig. 1



Fig. 2

Figs. 1 & 2: Opening day: and the crowds kept coming, and coming, and coming...



Fig. 5

THE EXHIBIT HALL

Figs. 3, 4 & 5: More than 300 exhibit booths gave participants an opportunity to check out the latest innovations in dental technology.

JOURNAL

July/
Juillet
1993
Vol. 59
No. 7



Fig. 6



Fig. 7

Figs. 6 & 7: It was standing room only in dozens of lecture halls to listen to an outstanding gathering of world renowned speakers and clinicians.



Fig. 8: CDA President, Dr. Bernard Dolansky (left), makes the draw for the winner of the Aurum/Ceramic Classic 1993 Jeep. Mr. Hyo Maier, Aurum/Ceramic President, and CDA Convention Chairman, Dr. Michel Jahjah carefully watch over the proceedings.



Fig. 9: Dr. Dolansky accepts the Jeep's keys from Mr. Maier, to be turned over to the winner of a brand new Jeep, Ms Linda Black, a dental assistant from British Columbia.



Fig. 10

Fig. 10: Drs. Michel Jahjah and Bernard Dolansky prepare to draw the lucky CDA/AIR Canada ticket — the winner, Ms. Althia Dawkins, is a dental assistant from Toronto.



Fig. 11



Fig. 12

Figs. 11 & 12: Conventions are always a time of learning. Mini-clinics and table clinics provided up-to-the-minute knowledge on everything that is new in dentistry.



Fig. 13: There's nothing better than hands-on learning!

OPENING CEREMONIES

(Figs. 14 & 15)



Fig.14: OPENING CEREMONIES: "You mean that isn't Joan Rivers"



Fig.15: OPENING CEREMONIES: The Canadian Children's Opera Chorus.



Fig. 16: No convention is complete without the Annual Fun Run.

JOURNAL

July/
Juillet
1993
Vol. 59
No. 7



Fig. 17: ODA Past President Dr. Peter Fendrich and CDA President Dr. Bernard Dolansky enjoy a moment of friendly repartee.

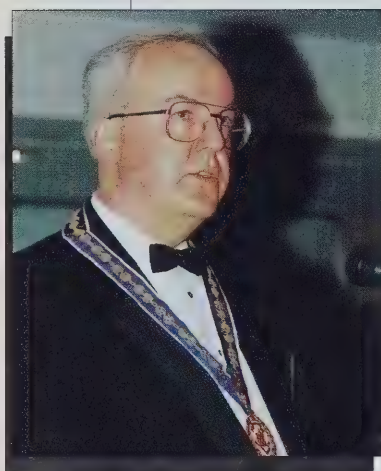


Fig. 18: ODA President 1993-94, Dr. George Sweetnam, Lindsay, Ontario



Fig. 19: "Thanks Les." Dr. Bernard Dolansky presents CDA Past President, Dr. Les Allen, a personally bound and inscribed issue of the 1991-1992 CDA Official Transactions.

THEY MADE IT ALL HAPPEN!

(Figs. 20 & 21)



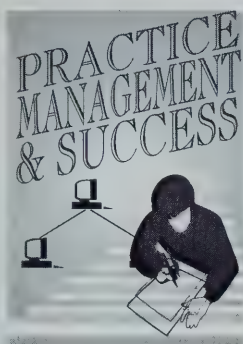
Fig. 20 : Thanks to the people who made it possible: (l. to r., rear) Dr. Michel Jahjah, Dean Brown, Tony DiGiovanni, Steve Eckensweiler, Bruce McLaren; (l. to r., middle) Chantal Bally, Joan Kerwin, Debbie Fisher, Edi Balian, Jonathan Thomas; (l. to r., front) Mary Castellano, Teresa Rollon, Suzanne Rassy, Laura Lam, Jack Pontes.



Fig. 21: Ms. Diana Thornycroft, meetings coordinator, Ontario Dental Association — Never without a wonderful smile.

Fig. 22: (Below) FDI IN VANCOUVER 1994. DON'T MISS IT!





Patient Brochures: The Value of Your Paper Representative

Imtiaz Manji, B.Sc.,
President of ExperDent

Last month, when I discussed newsletters, I intentionally steered clear of practice brochures. That's because newsletters and practice brochures are two quite distinct communication tools which, unfortunately, often get lumped together in the dental practice.

There's no getting away from the fact that the increasingly competitive marketplace has led many businesses to search for ever more creative ways to lure customers and clients their way – and to do their best to keep them on side. In marketing jargon, this singular attempt to keep existing business is known as "loyalty marketing." (A good example of this, as outlined in the February 11, 1993, *Globe and Mail*, is the Air Miles Reward program. To deter customers from the lures of the competition, participating companies reward their patrons with airline points.)

Dentistry is no longer "above" or immune to the pressures facing other businesses. It, too, must respond to the dynamic economic forces at work. It's no longer enough to supply quality dentistry, excellent service and a relaxing environment, you also have to communicate these attributes to your patients. You do this through a number of avenues, from hiring the right people (those who are qualified professionals and people oriented) to purchasing state-of-the-art equipment. Enhancing your image in the minds of patients can also be achieved through the effective use of printed matter. And

that's where a practice brochure can prove particularly useful.

What It Is and What It's Not

A brochure is quite distinct from a patient newsletter. Although there are common threads – both are printed materials that combine eye-catching graphics and informative text – their *raison d'être* are quite distinct.

A newsletter contains newsworthy dental articles and information about the happenings around your office, from staff achievements to patient milestones. It is generally a dynamic communication tool, containing information that reflects the "here and now." In other words, it is timely, relevant and incisive in the way that any regular publication should be.

In contrast, a brochure is the communication forum for material that is relatively constant. It is designed to be a one-off item that will be relevant not only today but also, hopefully, in a year from now. (Although you may update information from time to time, your brochure, for the most part, should serve you for years to come.) Some of the more appropriate items to insert in your practice brochure include office policies and procedures, practice philosophy and who to call in an emergency.

Before discussing what brochures can achieve and detailing what they should include, I must make it clear that brochures are not (or should not be) either dressed up advertising, slick promotion

pieces, or ostentatious. Instead, brochures should be informative, modest and professional-looking. And make sure that your brochure is designed with the audience in mind. It should be written for your patients, not in dental jargon.

What They're For

A practice brochure is the printed reflection of your practice. As such, it should:

- promote you, your staff and your practice philosophy
- extend a warm welcome to new patients
- attract new patients
- establish credibility
- answer questions
- explain office policies and procedures
- highlight areas of specialization
- generate patient loyalty
- communicate your uniqueness

Your brochure should demonstrate that your practice houses a team that has spent considerable time and energy developing and refining its clinical skills. The brochure should make a good impression for you, i.e. be your representative, when you're not able to communicate personally with patients. It's amazing how powerful a brochure can be in adding to a positive image. That said, if patients don't have positive experiences in your practice, the most professional-looking brochure will be for naught. A brochure can only serve as part and parcel of your overall efforts to impress patients. It



alone cannot create a positive image.

What It Should Include

The information in brochures varies from practice to practice but there are key areas that you'd be advised to cover, notably:

Mission Statement/Practice Philosophy

Often found at the beginning of brochures (after you've thanked patients for choosing you and welcomed them to your practice), are practice mission statements. Usually, these are succinct statements that convey what you stand for and what you strive for in your practice. Words like quality, excellence, service, patient-driven are often seen in mission statements. (If you don't already have a mission statement and are at a loss for words, brainstorming at a staff meeting is a good place to start.)

Services

With the ongoing advances taking place in dentistry, a brochure is the natural forum for outlining the various services you provide, be it cosmetic dentistry, implants or sealants. This section is also ideal for highlighting any technology that enhances your dentistry. So, if you have an imaging system or an intraoral camera, for example, let patients know what these tools are and how they will benefit from them. You may also want to include details of your infection control and sterilization program so that patients know you are doing everything possible to ensure their health and safety.

Uniqueness

Although much of the information you include in your brochure may be similar to that of other practices, give it a custom feel and look. It's as easy as including attractive graphics in the design of the brochure or a short profile of yourself – highlighting your professional achievements, memberships, and continuing education credits. (For information on the creation and design of brochures, please refer to last month's article, which outlines this process for newsletters. These steps also hold true for brochures.)

Financial Options

There is some disagreement when it comes to mentioning payment in a brochure. One school of thought says, "Don't do it!" The argument, here, is that financial matters are best left unsaid, at least until patients are face to face with you or your staff, as this knowledge may deter patients from proceeding with dental treatment. I don't agree. In fact, it can have a worse effect. If you outline all the methods of payment that are acceptable (cash, cheques, post-dated cheques, charge cards and dental insurance), patients may realize that there are payment options available that they never considered. If you do make special financial arrangements for extensive treatment, you may also want to remark on this. By being upfront about your financial policy, embarrassing situations, for both patients and staff, can be avoided.

Emergencies

Let patients know what they should do if they have a dental emergency when your practice is closed. Do they call the practice to listen to an answering machine message detailing the emergency protocol, do they call the doctor at home, or is there an emergency call system organized through the local dental society? Whatever the case, it's important that patients have this information and a practice brochure is a great way to provide it to them.

Referrals

Like many dentists today, you probably are glad to accept new patients. But your existing patients don't necessarily know that. Make a point in your brochure of telling patients that you would welcome the opportunity not only to meet their dental needs but those of their family, friends and colleagues as well. It's a subtle yet effective way of asking for referrals.

Distribution

Once printed, your practice brochure should be given to all new and existing patients. If there is a lag between the time a new patient appointment is made and the actual patient visit date, you may want to consider mailing out the

brochure. This will give the new patient insight into your practice, even before they've visited. In addition, by answering some of their general questions in the brochure, you'll save your staff from having to do so later.

Otherwise, your brochure should be handed out to new and existing patients when they arrive for their appointments. Having one of your staff actively hand out the brochure is far better than having the brochure passively available (sitting on a coffee table, for example). Your brochure is more likely to be read if it's handed directly to patients. And when it is, you'll be communicating that you provide quality dentistry and excellent service, instead of simply delivering it to them unheralded.

Other Ideas

In addition to a practice brochure, it's also wise to have literature on specific dental topics available in your practice. CDA publishes a series of booklets known as the Dental Information System. Brochure subjects range from safety issues at the dental office (X-rays, fillings, fluoridation, infection control) and restorative dentistry (root canals, bridges and dentures, crowns, implants, and fillings) to cosmetic dentistry (bleaching and bonding).

CDA's Dental Information System booklets contain sound oral health information that patients can refer to during their visit to your office or when they return home. Here again, these brochures can also be actively given out to patients. Although you won't want to overwhelm them by handing out every dental brochure you have on hand, you can target your readership by giving patients information that is relevant to their oral health.



Insurance and the Associate

Dr. Rod Moran, President of CDSPI

There are any number of reasons for dentists to join a practice as an associate.

To begin their careers, new dental graduates often enter into associateships with dentists who have already established a practice. Retiring dentists may take on an associate with the intention of eventually selling their practice to him or her. In an associateship, the dentist who is already established, the principal, acts as a provider by furnishing the new dentist, the associate, with supplies, staff and equipment. The details of what will be provided must be negotiated between the principal and the associate when the associateship is established. The new associate becomes a producer for the principal by increasing the number of patients the practice can handle.

As in any business relationship, there are risks and obligations for both parties in an associateship. As a participant in an associateship agreement, you have individual insurance responsibilities and needs — and potential financial obligations you may not be aware of unless you are paying close attention. Just because you are entering an already established practice as an associate doesn't mean all of your costs will be covered in the event of loss or damage. Nor does it insure your income should you become disabled. And just because you, as a principal, are bringing in a new associate doesn't mean the associate will be able to cover his or her share of the costs if there's a fire, flood or theft. Nor does it mean the associate will be able to cover his or her overhead costs in the event of disability.

The bottom line is that insurance needs and obligations should be

spelled out clearly in any associate's contract, and that both principal and associate should be keenly aware of their individual obligations.

As a new associate, just starting out, what will I need in my first year of practice?

As a new graduate who becomes an associate, you have immediate insurance needs.

- If you take CDA's grad package (free from graduation date until December 31 of the same year) you are already starting to put together an insurance program. The grad package includes \$50,000 of life insurance, \$50,000 of accidental death & dismemberment (AD&D) insurance, and long-term disability (LTD) insurance of \$2,000 a month. AD&D pays a lump sum for loss of life, limbs or eyesight. LTD provides monthly income payments if your income is reduced by 15% or more because of a disability.
- Malpractice insurance is essential, whether or not your provincial licensing body requires you to have this coverage.
- Insurance carriers and their consultants also strongly recommend that, as an associate, you should carry your own comprehensive general liability insurance. If you, the associate, are entering a relationship where you are splitting an office with a principal, you should not assume that you are splitting insurance coverage as well. It is your responsibility to find out what general liability insurance is in place, and whether or not there is

enough to cover you.

- You should also consider practice interruption insurance. This is insurance that protects your income in the event of a fire, break-in or other circumstance that might force you to temporarily close your office. A closed office means you aren't treating patients. And if you aren't treating patients, then you probably aren't earning any income. Generally speaking, as an associate, you can insure the portion of income you retain by applying for a small amount of practice interruption insurance. Insurers suggest that the minimum amount of insurance should be a figure equal to roughly four times your maximum monthly billings. This amount should be adjusted to reflect any anticipated growth over the next 18 months. If there's a serious fire in your office, it could take at least four months to replace everything. You may even have to move to a new office.
- Finally, you should consider having office overhead expense insurance (OOE). OOE is paid to you for eligible overhead expenses during any continuous period of total or partial disability. OOE is an excellent partner with LTD. Together, the two plans will insure your income and expense obligations should you be unable to practice for a prolonged period of time.

Are these risks real?

Absolutely. Dr. Karim Manji, a 1992 University of Toronto graduate, became an associate at the Uxbridge Health Centre, in Uxbridge, Ontario, last June. Shortly after he began practicing, there was a serious fire that destroyed his entire

JOURNAL

July/
Juillet
1993
Vol. 59
No. 7

office. Anything that was not lost could not be used because of extensive smoke damage. Unfortunately, Dr. Manji did not have practice interruption insurance. It wasn't until disaster struck that he became aware of his insurance needs.

Luckily, within a week, Dr. Manji and his principal were able to temporarily relocate and resume working. Dr. Manji learned the hard way that just because you are an associate doesn't mean you are protected. According to Dr. Manji, "Starting out as a new associate is like having your own small business. Another dentist is contracting your services, but you are responsible for everything you do."

As the principal, what are my concerns?

There are also concerns from the principal's point of view. A fire will not only put you and your associate at risk of losing income, it will also put you in the position of having to replace much or all of your equipment, and repair or move your office. Your associate may be responsible for a share of these costs under the terms of your associateship agreement. If your associate doesn't have practice interruption protection, he or she may not be able to pay what's required under the terms of your associateship agreement. Without proper coverage, having recently graduated and having relatively low earnings, your associate is unlikely to be able to afford to pay for extensive damage. Similarly, if your associate were to suffer a disability and could not practice for a period of time, he or she might have difficulty covering the agreed upon share of expenses without OOE coverage. For your own protection, it is up to you to be certain that your associate is clear about his or her responsibilities and has sufficient coverage.

As an associate, where do I start?

The key to building an insurance program that is both comprehensive and cost-effective is to add to it on an as-needed basis. By increasing coverage in gradual steps you can keep your premium as low as possible. If you are a new graduate,

your income is on the rise but far from peaking. As you grow older, marry, have children, and build your practice, your needs will increase substantially. Generally, a new associate is on the road to establishing a single practice. The insurance package you establish for yourself now sets the stage for future needs.

Most dentists, especially new associates, become targets for agents and brokers. Over the phone, face to face, through the mail—whatever the medium—the broker's objective is pretty much the same, namely to sell their product. As an associate, you have special needs. You need the right amount of coverage for your situation at that time—it has to be affordable and it has to make sense. You don't necessarily need high premiums. You are more likely to want to start off slowly and build your coverage as needs arise.

Don't forget, your income and practice will rise. Ten or 15 years down the road, you will likely need more coverage, but you'll also be better able to afford it. Over time, it will be necessary to gradually increase your LTD and OOE coverage as your practice grows. It is also quite probable that you might be supporting a family and will want to increase your life insurance. Since medical evidence of insurability will have to be provided each time you increase your life, LTD and OOE coverage, you should start out with a reasonable level of coverage that meets your basic financial needs. By purchasing the Future Insurance Guarantee option you can give yourself the option of increasing your coverages at periodic intervals even if you later develop a medical condition that makes you uninsurable. At the same time, you do not want to get

CDIP Malpractice Insurance is Cost-Effective and Competitive

A recent survey* of the 1993 malpractice insurance premium schedule for the ODQ (Order of Dentists of Quebec) revealed that, as was the case in 1991 and 1992, CDIP premiums continue to be lower at all levels. The following is based on a \$500 deductible (it is our understanding that the ODQ does not give optional deductibles of \$1,000 or 2,000). The premiums do not include the nine per cent provincial sales tax that applies in the Province of Quebec.

Limits	Actual CDIP	Actual ODQ
\$2,000,000	\$673	\$730
\$3,000,000	\$733	\$780
\$4,000,000	\$768	\$820
\$5,000,000	\$798	\$860

Additional information revealed that 1993 CDIP malpractice insurance premiums are also lower than RCDS (Royal College of Dental Surgeons of Ontario) malpractice premiums at all levels. Based on a \$1,000 deductible (to our knowledge, RCDS does not offer optional deductibles of \$500 or \$2,000), the premium comparison between CDIP and RCDS is as follows:

Limits	Actual CDIP	Actual RCDS
\$2,000,000	\$645	\$690
\$3,000,000	\$705	\$733
\$4,000,000	\$741	\$768
\$5,000,000	\$771	\$798

**Survey information provided by F. Wallace Clancy & Son Ltd, Insurance Brokers.*

into a situation where you are overinsured and are therefore paying out premiums unnecessarily. It is far more expensive to have to restructure your program than it is to start it up properly in the first place.

After your first six months of practice, you should sit down and look at your long-term plan. Determine what you think you might earn in your first year and see if you're on target. If you are way ahead of your goal, you may need to adjust your disability insurance. After the first year, you should sit down again and look at each area of need. An insurance need, related to an event, probably means you will suffer a loss. If you can stand up to this loss, then you have enough protection. Your needs will continue to change over the years. You should be aware of any changes, and be able to evaluate and act upon them accordingly.

What can CDSPI do to help me?

CDSPI administers CDIP, the Canadian Dentists' Insurance Program, a full range of insurance

plans designed specifically to meet the needs of dentists. CDIP is owned and operated by CDA and nine provincial dental associations.

CDSPI (Canadian Dental Service Plans Inc.) is your resource centre. We understand your needs and the pressures you are under. We are here to answer your questions and help you become a better business person.

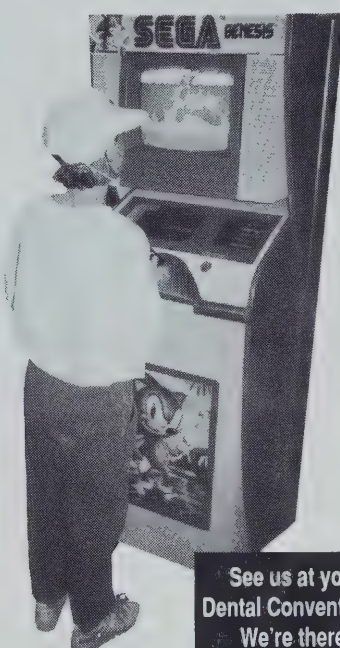
Before you consider buying private insurance, you should obtain all proposals in writing, and be sure that you understand what is being proposed prior to making a commitment.

If you need help making decisions about the insurance coverage you need, you can call CDSPI and take advantage of our free insurance review and evaluation service. It provides accurate information and assistance with no pressure and no obligation. You can forward your insurance proposals or other documentation that you would like evaluated to CDSPI. In return, you will receive an independent, written evaluation, free of charge.

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Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	May 28, 1993	April 30, 1993	
Bond & Mortgage Fund	105.61792	104.69725	11.7%
Common Stock Fund	20.99509	20.51529	18.2%
Money Market Fund	64.49334	64.06412	6.2%
Balanced Fund	39.40755	38.85352	10.8%

G.I.C. Fund

Term	May 28, 1993	April 30, 1993
1 yr	5.60%	5.60%
2 yr	6.25%	6.10%
3 yr	6.45%	6.35%
4 yr	7.10%	7.10%
5 yr	7.25%	7.15%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

	May 28, 1993	April 30, 1993
	\$180,668,850.00	\$178,525,318.93

For further information:



Write:
CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:
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Lee Maddison Retires: A New Lease on Life?

P. Ralph Crawford, BA, DMD

At the conclusion of CDA's Annual Dental Meeting last April, Mr. Lee Maddison announced his retirement from MediDent Professional Services, the dental leasing company that he helped found more than 30 years ago.

I was a senior dental student when Mr. Maddison presented MediDent's very first student seminar to the faculty of dentistry at the University of Manitoba. His intent was to inform the about-to-become dentists about the virtues of leasing dental equipment. The students' had different ideas, however. To this day Mr. Maddison and I, now the editor of this journal, laugh about the outcome of that first MediDent venture. This interview will highlight the contributions of Lee Maddison, who pioneered a whole new concept of financing dental practices.

Journal: Mr. Maddison, you are retiring after over 30 years in the dental leasing business. Would you tell us how and where you got started?

Maddison: MediDent was started 30 years ago in Hamilton by a dentist, Dr. Neil Webster. He subsequently sold the business to the Young family, also from Hamilton. It was very small back then — I think it was comprised of only 18 leases and about \$250,000 outstandings. I joined the company at that time.

Journal: Was it only dental leasing?

Maddison: Yes it was. Neil Webster



Lee Maddison (left) of MediDent reviews 30 years of dental leasing with Journal Editor Ralph Crawford.

was a dentist and he got the idea because his brother, who was in the automobile business, had an associated leasing company. Dr. Webster had arranged to lease his dental equipment through his brother's car leasing business, but General Motors didn't take very kindly to that. Neil Webster then decided to start his own leasing company to do business with the dental profession.

**We think it was the
forerunner of dental
leasing anywhere in the
world.**

We think it was the forerunner of dental leasing anywhere in the world. We did take it to the United Kingdom in 1970 and we did a lot

of looking around in the United States but it seems MediDent flourished best in Canada.

Journal: What were you doing before that?

Maddison: I was with IBM at the time, and prior to that I was with a firm called Industrial Acceptance.

Journal: Does MediDent do only dental leasing?

Maddison: We now do all types of health profession leasing, but dental has always been our major interest.

Journal: You keep using the plural "we." Who does "we" refer to?

Maddison: To start off with, Ben Young, Jack Schunk, and myself were the three principals. At the outset, there were about 15 or 18 leases. Today we have about 7,000 active leases that cover in excess of

\$200 million in assets.

It's been a very interesting 30 years. In the beginning we primarily did a lot of lease-backs. At that time, dentists owned their own equipment and we came along with the idea that MediDent would buy the equipment from them and allow the dentist to withdraw the capital tied up in the office. The dentist would continue to utilize the equipment but use the extra money to pay off a mortgage, or anything else he or she wished, and expense the lease payments before taxes.

That was the way MediDent got into dental financing. The next step was involvement with set-ups for new graduates and anyone else starting a practice, as well as new equipment being acquired.



Back in the 1960s, new graduate set-ups represented about 25 or 30 per cent of our business. Today, that figure would be closer to half of one per cent.

This brings up some interesting statistics. Back in the 1960s, new graduate set-ups represented about 25 or 30 per cent of our business. Today, that figure would be closer to half of one per cent. Very few of the initial start ups occur directly from school nowadays. We still do new set-ups, but these are usually dentists who are already associating in practice and want to go on their own.

We still call on the schools like we did when you were a student in the early '60s. We do "dog and

pony shows" and go over the merits of leasing — what can be done, how it can be done. But it is more of a missionary type of work. We don't expect that we will be doing very much immediate business. Today it is not like it was with your class when a significant number of new grads went directly into practice.

Journal: *It's not hard to understand that dramatic shift of statistics when you consider the plight of graduates of today. My latest information is that 25 to 30 per cent of the University of Toronto's class of 1992 is still not permanently placed. It is a very sad commentary on the times.*

Maddison: In those early days of leases in the 1960s and 1970s, our company's losses from delinquent leases was infinitesimal. There is no doubt that there has been a rather dramatic evolution. We have seen more and more locations become full and we have become more selective with whom we do business — we are much more concerned where they are going, how much they are going to spend, their projected cash flows, etc.

Journal: *If MediDent was the first in the leasing business, are there other companies today that specialize in medical and dental financing?*

Maddison: Oh yes. We ourselves have spawned a few of them — a number of them manned with ex-MediDent employees. Some of these no longer exist. The most recent, and our greatest competitor, is Health Group Financial.

Journal: *How many people does MediDent employ today?*

Maddison: When MediDent was a stand-alone organization we had about 45 employees. Today it is more difficult to define. MediDent is now a division of Commcorp Financial Services, Inc. whose principle shareholder is the Canadian Imperial Bank of Commerce. Our marketing and credit arms are dedicated strictly to MediDent, while the "back shop," such as customer service, is amalgamated in with the other leasing divisions.

Journal: *What types of leasing have been most popular down through*

the years. Has it been equipment or leaseholds?

Maddison: When we started out it was strictly equipment, but then it



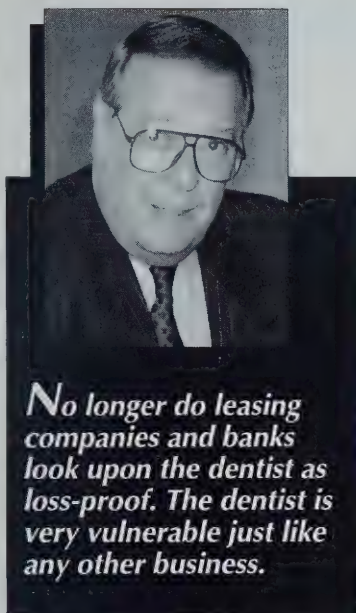
In the last five years the buy-sell side of our business has become much more prominent and the buy-sell deals involve another component, goodwill.

became equipment and furniture, and then it became equipment, furniture and leasehold improvements. Then for a period of time leasehold improvements predominated. Back in the 1980s, dentists were building some pretty fancy offices with substantial leaseholds.

What many people in the '80s were doing was renting space for four and five operatories with full plumbing and services but only placing equipment in the front two, making their leaseholds more than 50 per cent of the lease. This appears to have settled back today. Dentists are modifying their strategies as rents became more expensive and their business becomes more acute.

Journal: *In recent years, we have noticed more MediDent activity in the classified sections of dental journals — is this a new type of market for you?*

Maddison: Yes, in the last five years the buy-sell side of our business has become much more prominent and the buy-sell deals involve another component, goodwill. Because you can't lease goodwill, we



find ourselves arranging a lease for the equipment and leaseholds and a note for the goodwill. This has brought us a fair distance away from purely leasing — it is like an office mortgage, another alternative to going to bank.

One of the main things we are looking for in a buy-sell deal is the cash flow component. Questions we ask ourselves up front are, "are you dealing with the right person and are you dealing with a viable situation." For example, if we have a buy-sell deal for \$300,000 we have to look critically at debt retirement. Is the practice under a new dentist going to be able to sustain that amount of debt?

Journal: Is a tax concession still the biggest advantage of leasing?

Maddison: It is a major one that hasn't changed a great deal down through the years. There are different reasons for people leasing. Some do it purely for convenience, others do it as an alternative to the bank because they don't want to tie up all their bank borrowing, and others just don't want their money invested in a depreciating item. But the tax element is always attractive.

Journal: Are there times when you advise people not to lease?

Maddison: Occasionally; if people have capital that they don't know what to do with, why lease.

Journal: If there are about 12,000 dentists practising today, what percentage would be leasing?

Maddison: I would guess — and it is a guess — about 40 per cent.

Journal: What are some of the biggest changes you have noticed down through the years?

Maddison: We have already talked about the decrease in the number of newly established practices. But we have also noticed a change in the size of leases down through the years, and even this seems to change with the times. In the 1980s, with the building of very large, fancy offices, some leases were very large. In recent years, they have become more conservative.

One of the things that has concerned us is that in certain locations — Toronto comes to mind — dentists are having a tough time. We see it in our collections, we see it in our losses and we see some dentists going under. No longer do leasing companies and banks look upon the dentist as loss-proof. The dentist is very vulnerable just like any other business.

Journal: What do you see in your crystal ball — five or 10 years down the road?

Maddison: One of the things I see now and coming up in the future is the baby-boom spike passing through the profession of dentistry. I see a number of these dentists talking about selling their practices. Maybe they are not quite ready at this moment, but they are talking about moving on and this will create more room for those coming behind.

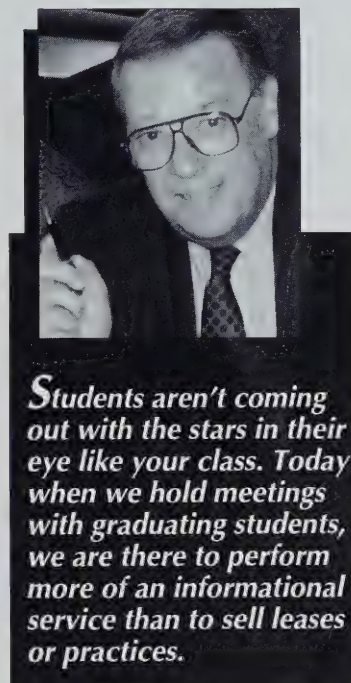
Journal: Do you think the dentists are expecting as much these days as when you and I started 30 years ago?

Maddison: No, they certainly don't, particularly the students. They aren't coming out with the stars in their eye like your class. Today when we hold meetings with graduating students, we are there to perform more of an informational service than to sell leases or practices — knowing we may not write a lease or arrange a buy-sell for a few years down the road.

Journal: What happens to Lee Maddison now? Does it mean all golf and skiing from here on in?

Maddison: Not at all. I will continue to do some work for MediDent on a retainer basis. I have been working on the brokering of practices and have even taken out a real estate license in order to be able to keep involved in that end of the business. I certainly don't want to not work — I have been too busy for too many years. I am fortunate in that I still have good health and the company seems to think I am still of some value to them.

Journal: Will we still see you at all the dental meetings? I can't imagine a major meeting in Canadian dentistry without Lee Maddison.



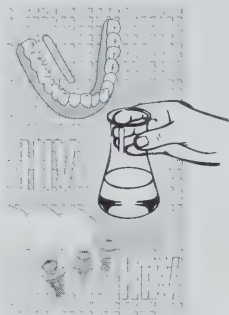
Maddison: Oh yes, at least for the near future — it's one of the fun things I enjoy because it is the one opportunity to meet all those wonderful people who make up the dental industry.

Journal: Lee, the *Journal* and all Canadian dentistry wish you all the best for the future years and we will continue to look forward to seeing you at those great meetings.

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FEATURE



The Whole Truth or Nothing? A Tale of Misinformed Consent

Derek W. Jones, B.Sc., PhD, FRSC(U.K.), FADM

Editor's Note: *The Journal* was recently informed that a P.E.I dentist was circulating a "disclaimer" to patients who questioned the mercury content in amalgam. When the *Journal* spoke with the dentist about the disclaimer, he indicated that he did not have a bias one way or the other concerning silver amalgam fillings, but felt it was both his obligation to the patient, and protection for himself, to "present the case as he saw it."

Some Canadian dentists have chosen to post a "mercury amalgam" disclaimer in their dental office waiting-rooms. The disclaimer I reviewed (see box) did not carry a signature nor did it carry the name of any individual or organization. The document provides seven statements, which are listed as facts. It is clearly the obligation of all dentists as responsible professionals to inform their patients about all treatment procedures in a conscientious way. It is also important that a balanced picture relating to treatment options, material selection and cost implications are provided. However, given the complexity of modern dentistry, this is not an easy task. It is clear that dentists need to be able to understand and interpret the constantly changing and expanding scientific basis of materials and techniques. This can only be achieved by keeping abreast of current knowledge by reading the dental and biomedical scientific

DISCLAIMER

We feel it is our duty to inform you about "Silver Fillings."

- **FACT:** Dental amalgam, or silver fillings, contain from 48-55 per cent mercury, 33-35 per cent silver, and various amounts of copper, tin, zinc, and other metals. Since mercury is the major component of the material, by law any representation of the material should include the word "mercury." Thus mercury amalgam fillings.
- **FACT:** Mercury is a very toxic poison. Published research has shown that mercury is more toxic than lead, cadmium, and even arsenic. Some say that mercury is the second most toxic element on earth, next to plutonium.
- **FACT:** Scientific research has demonstrated that mercury, even in small amounts, can damage the brain, heart, lungs, liver, kidneys, thyroid gland, pituitary gland, adrenal gland, blood cells, enzymes and hormones, and suppress the body's immune system. Mercury has been shown to pass the placental membrane in pregnant women and cause

permanent damage to the brain of the developing baby.

- **FACT:** Mercury does escape every day from your mercury fillings, in the form of mercury vapor, and is increased greatly when the fillings are stimulated by chewing, brushing, or exposure to heat.
- **FACT:** The mercury vapor is absorbed very rapidly and thoroughly in your body primarily by inhalation and swallowing.
- **FACT:** In human autopsy studies, a relationship is found showing that the amount of mercury found in the brain or kidney tissue is directly related to the amount of mercury amalgam filling material found in the teeth.
- **FACT:** The Canadian Dental Association still supports the use of mercury amalgam fillings as a safe filling material.

Should you or your children have mercury amalgam fillings put in your teeth? It is not for us to say. It is your decision. You have a right to an informed consent and freedom of choice. Ask for additional information on the subject if you are interested.



literature and attending appropriate scientifically-based presentations at recognized meetings.

The disclaimer presented here is rather limited, since it only relates to some aspects of mercury, an element contained in silver amalgam restorative materials. It does not state that: We feel that it is our duty to inform you about the specifics of all types of materials and techniques used in our practice. Nor does it state, for example, that X-rays are known to produce cancer; that chloroplatinic acid, a known poison, is used as a chemical activator in addition reaction silicone dental impression materials; that phosphoric acid, a strong acid that destroys natural tissues, is used in dental cements and as an etchant for tooth enamel; that methyl methacrylate, as well as a whole range of dimethacrylates used as dental monomers, and a number of chemical initiators and activators, used in composite materials, are known to be toxic; and that a whole range of phthalate esters, used as plasticizers, are also known to be toxic.

In addition, the disclaimer does not state that many cement materials containing zinc oxide may also contain a certain amount of arsenic. It does not state that some of the porcelain materials used in crown and bridge work and for denture teeth contain radioactive elements as fluorescing agents. The document does not state that the elements nickel and cobalt are both known to be carcinogens or that some chromium compounds are known to be toxic. Nor does it state that while we come into contact with some 60,000 common compounds on a daily basis, we only have adequate biological safety data on less than two per cent of them. In effect, the disclaimer does not state that we cannot guarantee absolute biological safety for many of the substances used in the majority of our dental materials.

Ironically, when we purchase a packet of table salt with our groceries, it does not carry a label stating that this compound contains two poisonous elements, sodium and chlorine. Clearly, we need to be sensible about the information pro-

vided to the general public. The truth is that we all know that some simple facts quoted out of context without qualification and correct interpretation can be quite alarming and misleading. We all know for a fact that it would be unethical for responsible health care professionals to deliberately and knowingly mislead the public.

It was stated very well by Paracelsus, in the 16th century, that: "All substances are poisons. There is none which is not a poison. The right dose differentiates a poison and a remedy." This wisdom, while over four hundred years old, can be applied to the use of X-rays, for the chemical activators in the addition reaction silicone impression material, for the phosphoric acid used in cements, for the leachables from composite materials, as well as for mercury that may be released from amalgam restorations. We recognize that many of these elements or compounds are only present or available in quantities well below the level at which we are able to detect any biological reactions that may or may not result in any adverse effects. We recognize that many of the elements and compounds present in our dental materials are known to be poisons, but when reacted with other materials to form compounds they can become inert and quite harmless. In the same way that sodium reacts with chlorine, these poisonous elements form a compound that is a necessary component of our daily diet. Even so, an excess amount of salt, or indeed an excess of many other constituents of our normal diet, can be hazardous to our health.

Let us look in detail at each of the seven statements listed as facts in the disclaimer. The first one states that: "Dental amalgam, or silver fillings, contain from 48-55 per cent mercury, 33-35 per cent silver, and various amounts of copper, tin, zinc, and other metals. Since mercury is the major component of the material, by law any representation of the material should include the word "mercury." Thus "mercury amalgam fillings." This statement does not specify if it is referring to the ingre-

dients present prior to the mixing and chemical reaction, or to the composition that results following the mixing and reaction. Clearly, if it was specifying the final reacted components it would state that the compound contained the crystalline phases of the silver, tin, copper, alloy, mercury system. The statement that mercury should be mentioned by name disregards the fact that the word amalgam by its very definition is an alloy (compound) of mercury together with one or more other metallic elements. When elements combine to form a compound they no longer possess the same properties that they had prior to the chemical reaction. However, it should be noted that it has been recommended that the U.S. Food and Drug Administration (FDA) consider new specifications in the labelling of all dental restorative materials, including dental amalgam. It has been suggested that this include a list of ingredients contained in the product, in order of decreasing amount (per cent composition) including flavoring and coloring agents and (certain) trace contaminants. Perhaps we should also present the fact to the patients that the cost of replacing all of the dental amalgam restorations in the United States has been estimated at \$12 billion dollars, and this figure might be as high as \$1 billion in Canada, which would clearly be an incredible bonanza for the practising dentists.

The second statement was as follows: "Mercury is a very toxic poison. Published research has shown that mercury is more toxic than lead, cadmium, and even arsenic. Some say that mercury is the second most toxic element on earth, next to plutonium." Does retail business need to inform the public that the sodium and chlorine contained in common salt are poisons? Should dentists as responsible professionals be informing the public about the fact that a large number of elements and compounds used as constituents of dental materials are known to be toxic. Should patients be informed that arsenic may be present in small amounts in some of our cement materials. Chloroplatinic acid, for example,



may well be a greater health hazard than elemental mercury. Scientific research has shown that the amount of mercury released from dental amalgam restorations over an average day is of the order of 1.7 μg . Should the public be informed that the amount of mercury released is 100 times less than the accepted level considered safe for mercury vapor in the workplace?

The third statement was as follows: "Scientific research has demonstrated that mercury, even in small amounts, can damage the brain, heart, lungs, liver, kidneys, thyroid gland, pituitary gland, adrenal gland, blood cells, enzymes and hormones, and suppress the body's immune system. Mercury has been shown to pass the placental membrane in pregnant women and cause permanent damage to the brain of the developing baby." The fact is that the relationship between the observed effects and tissue levels for mercury is not clear. A comprehensive scientific review by the Department of Health and Human Services, Public Health Service of the United States, issued in January 1993, stated that: "A critical review of the methods and procedures used to determine the mercury content of tissues and organs in some human studies — even in many that are often cited — suggests that the results are ambiguous, inaccurate and sometimes false. For these reasons the conclusions drawn from such studies are severely impaired and at times completely useless." The same report also states: "...there are no data to support the idea that the mercury from amalgam fillings is responsible for auto-immune disease or kidney lesions in man, or that mercury from amalgam fillings negatively affects the immune system."

The fourth statement was as follows: "Mercury does escape every day from your mercury fillings, in the form of mercury vapor, and is increased greatly when the fillings are stimulated by chewing, brushing or exposure to heat." The fact is that it should also be stated that mercury escapes every day from capsules during trituration, as well as during condensation, in every dental office using amalgam proce-

dures. As a consequence, the average dentist is exposed to levels of mercury at far higher levels than any patient with a large number of amalgam restorations. However, with good mercury hygiene practice this mercury vapor will be well below the limit set by the health agencies for mercury in the work place. The fact is that in spite of being exposed to higher levels of mercury, the dental profession as a group have a health status that is not significantly different than the rest of the population. Clearly, this would seem to suggest that the health status of individuals within the dental profession strongly supports the scientific consensus that mercury released from dental amalgam restorations does not present a health hazard to the patient. Research has shown that the health status of individuals within the dental profession strongly supports the scientific consensus that mercury released from dental amalgam restorations on a time weighted average over a period of 24 hours was as low as 1.7 μg Hg/day. It can be calculated that this provides a margin of safety of 100 times below the safety level accepted by the World Health Organization (Threshold Limit Value of 50 $\mu\text{g}/\text{m}^3$). It should in all fairness be pointed out to the patient that the level accepted as the Health Hazard Limit is set at 40 per cent above this at 70 $\mu\text{g}/\text{m}^3$. The review report by the Swedish Medical Research Council states that: "Although mercury is known to be a weak allergen and allergic reactions may occur, no evidence exists of systemic toxic effects from mercury released from dental amalgam." According to Horsted-Bindslev et al (1991): "...the comparison of mercury exposure from dental amalgam with the lowest adverse effect level in the most sensitive individuals shows a substantial safety factor."

The fifth statement was as follows: "The mercury vapor is absorbed very rapidly and thoroughly in your body primarily by inhalation and swallowing." It should also be stated that elemental mercury is also excreted very rapidly and is also deposited in non-vital tissues such as hair and nails. The half time for mercury elimination (50 per cent) from the lungs is two days and from the blood between

15-30 days. The main form of elimination is fecal (90 per cent) and the remaining 10 per cent is in urine (Bindslev et al, 1991).

The sixth statement was as follows: "In human autopsy studies, a relationship is found showing the amount of mercury found in the brain or kidney tissue is directly related to the amount of mercury amalgam filling material found in teeth." According to a June 1991 FDI policy statement, a substantial intake of mercury is from food, primarily from fish and other seafood. The body burden of mercury from amalgam fillings is relatively small in comparison with that obtained from regular food sources. The German Federal Public Health Office, in their 1992 guidelines, made the following statement: "According to the latest status of scientific knowledge, no reasonable suspicions that amalgam fillings are hazardous to one's health can be established from a medical point of view if one considers the already extensive burden of mercury through a person's daily intake of mercury with food, water and air." A lack of knowledge about the accurate history of the dietary habits of subjects in autopsy studies as well as the limitation in the size of the samples tested is a significant complication and limits the value of the data. It is questionable whether such studies can produce significant relationships between mercury in tissues and the number or surface area of amalgam restorations that are meaningful and reliable. The fact that one can produce a significant statistical relationship between two entities does not necessarily mean that there is a causal relationship or linkage. A relationship may be found between the size of a group of individuals feet and the number of amalgam fillings they possess, but such a relationship has no validity and simply occurs by chance.

The seventh and last statement was as follows: "The Canadian Dental Association still supports the use of mercury amalgam fillings as a safe filling material." It should also be stated that not only does CDA still support the use of amalgam, they are not alone in maintaining this position. Responsible,

scientific bodies such as the National Institute of Health in the United States (NIH) and the Swedish Medical Research Council (MRC), the German BGA, as well as the ADA in the United States and the Department of Health and Human Services, Public Health Service, the British Health Service, and FDI, not to mention the world scientific community, have all recently pledged support for the continued use of dental amalgam.

The German Federal Health Agency (Bundesgesundheitsamt, BGA) stated in 1992 that: "According to the latest status of scientific knowledge, no reasonable suspicions that amalgam restorations are hazardous to one's health can be established from a medical point of view if one considers the already extensive burden of mercury through a person's daily intake of mercury from food, water, and air." Organic forms of mercury, such as those found in the food chain, are known to be up to 100 times more hazardous than elemental mercury. At least 20 states in the U.S. have issued fish advisory notices over the past several years because of the levels of mercury contamination.

The United States Public Health Service have also stated that: "Because no credible scientific studies show that exposure to mercury from amalgam dental restorations causes disease in humans, except for allergic reactions affecting a small segment of the population, there is no health-based reason for the Public Health Service to restrict the use of amalgam for dental restorations." It was also stated by the PHS report that: "The removal of any dental restoration should be based on sound scientific criteria. The extensive removal of dental restorations poses potential risks to the oral and general health of individuals." This should perhaps be one of the most important disclaimers to present to patients. We are also reminded by Dr. Ivar Mjor that: "The removal of any restoration, whether it is made of amalgam, composite resin, or any other material, is unethical if it is done on a dentist's diagnosis and treatment of systemic diseases."

We should perhaps also inform

patients that the long-term cost of two or three-surface gold and composite restorations in permanent teeth is similar and about four times greater than for amalgam restorations.

Given this consensus of world scientific opinion, based on the most reliable validated scientific evidence that is available to us in 1993, it would seem unreasonable, at the very least, for responsible dental practitioners, to provide their patients with a disclaimer list that was less than comprehensive, lest their patients feel misled. Dental practitioners, as applied scientists with a university degree, are well acquainted with the fact that in dental science, in medical science and indeed in all science, absolute proof does not exist. Karl Popper reminded us that we must always start with a working hypothesis that offers the best explanation of a series of observations. We can only support this hypothesis so long as rigorous tests have repeatedly failed to prove it false. Such a hypothesis, when withstanding the test, can only be regarded as an approximation of the truth. This is why Albert Einstein reminded us that it would only take one experiment to prove him wrong, and why Bertrand Russell said: "Even when all the experts agree, they may well be wrong." The fact is that the hypothesis stating that dental amalgam restorations do not present a health hazard to patients is currently an approximation of the truth, in the true classical philosophical scientific sense, as is the hypothesis that composite restoratives and all other dental materials do not present a health hazard to our patients. The fact is that absolute scientific proof does not exist at all, we only have a temporary knowledge base as our working hypothesis.

Conclusion

If dentists are to warn patients about the hazards of mercury in dental amalgam, they must in all honesty and fairness, also warn them against the dangers posed by many other dental materials, as well as many of the procedures, techniques and pharmaceuticals now used in dentistry. ■

Dr. Derek Jones is professor, the assistant dean, research, the chairman of the department of applied oral sciences, and the chair and head of the division of dental biomaterials, faculty of dentistry, at Dalhousie University.

References

1. Berglund, A. Estimation by a 24 hour Study of the Daily Dose of Intra-Oral Mercury Vapor Inhaled After Release from Dental Amalgam. *J Dent Res* 69:1646-1651, 1990.
2. Department of Health and Human Services, USA. *Dental Amalgam* Final Report of the Subcommittee on Risk Management of the Committee to Coordinate Environmental Health and Related Programs. Public Health Service. January 1993.
3. Horsted-Bindslev, P., Magos, L., Holmstrup, P. et al. *Dental Amalgam — A Health Hazard?* Munksgaard, 1991.
4. Jones, D.W. Giving Science a Bad Name. *J Canad Dent Assoc* 57:291-293, 1991.
5. Jones, D.W. The Enigma of Amalgam in Dentistry. *J Canad Dent Assoc* 59:155-166, 1993.
5. Swedish Medical Research Council (1992), Potential Biological Consequences of Mercury Released from Amalgam. A State of the Art Conference in Stockholm, April 9-10, 1992.
6. WHO, IPSC, Environmental Health Criteria 118, Inorganic Mercury, 1991.
7. WHO, Recommended health-based limits in occupational exposure to heavy metals. Report of a WHO Study Group, Geneva, World Health Organization (WHO Technical Report Series, No 647) 1980.



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References 1. Stookey GK et al. *Caries Research*, June 1993.

Applies for equal total fluoride levels versus SMFP.

2. Procter & Gamble, data on file based on mathematical model In;

Kingman A. *Caries Research* 1993; in press.

P A A B



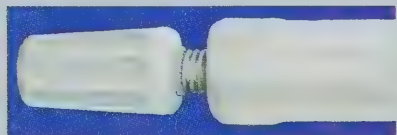
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U.S. patent 5,055,045



A Decade of AIDS, and Its Implications For Canadian Dentistry

J. Hardie, BDS, M.Sc., FRCD(C)

Introduction

The spectre of AIDS has existed for at least 10 years. Considering the intensity of the research, debate, and publication that AIDS has generated in this decade, enough information should be available to develop a dispassionate perspective of the condition. Data collected by the division of HIV/AIDS epidemiology of Health and Welfare Canada may facilitate this process.

Since the mid-1980s, the division has been collecting, collating, and distributing information relevant to the AIDS experience in Canada. This data is published as a quarterly surveillance update, *AIDS in Canada*. In fact, the publication's January 11, 1993, edition forms the basis of this review.¹

Review

As of December 31, 1992, the HIV/AIDS division received reports indicating that a total of 7,205 adults and 77 children had been diagnosed with AIDS from 1979-1992. The individual yearly totals are listed in Table I. It is clear that a dramatic rise and fall in the number of AIDS cases reported annually has occurred, with the greatest number of reported cases occurring in 1989. Indeed, the figure for 1992 is close to the one recorded for 1986. A similar pattern of rise and fall can be seen in Table II, which lists individual yearly death

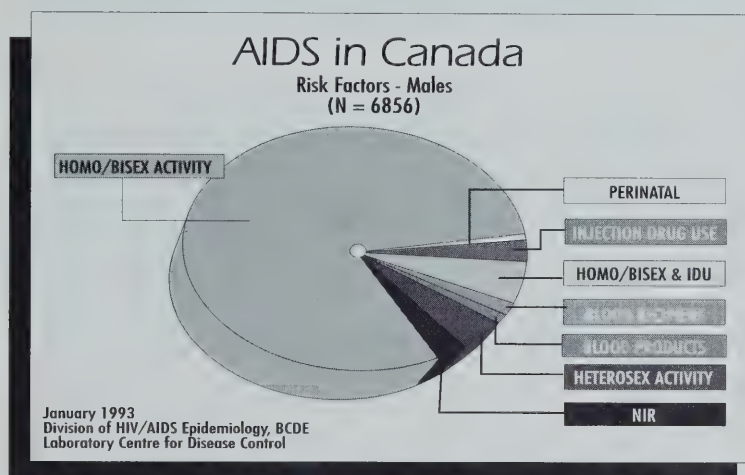


Fig. 1: Illustration of the risk factors for males in Canada

TABLE I

AIDS Cases

Year	No.	Year	No.
1979	1	1986	601
1980	5	1987	896
1981	8	1988	1,060
1982	24	1989	1,220
1983	59	1990	1,169
1984	160	1991	1,097
1985	360	1992	622

totals. The highest number of AIDS-related deaths occurred in 1988, however. Of the 7,205 adults reported to have AIDS, 4,635 have died, as have 50 of the 77 children.

Table III lists, by gender, the number of Canadians alive with AIDS as of December 31, 1992. The

TABLE II

AIDS Deaths

Year	No.	Year	No.
1979	1	1986	528
1980	4	1987	737
1981	8	1988	811
1982	23	1989	800
1983	58	1990	644
1984	146	1991	449
1985	326	1992	152

TABLE III

Alive With AIDS December 1992

Adults	Children
2,437 Males	15 Males
133 Females	12 Females

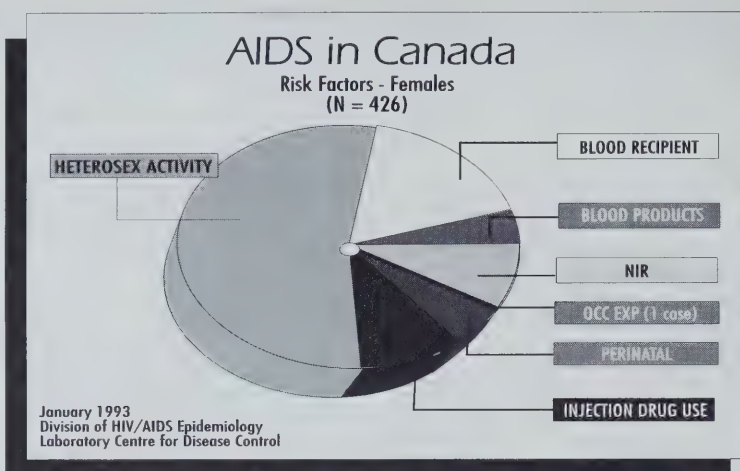
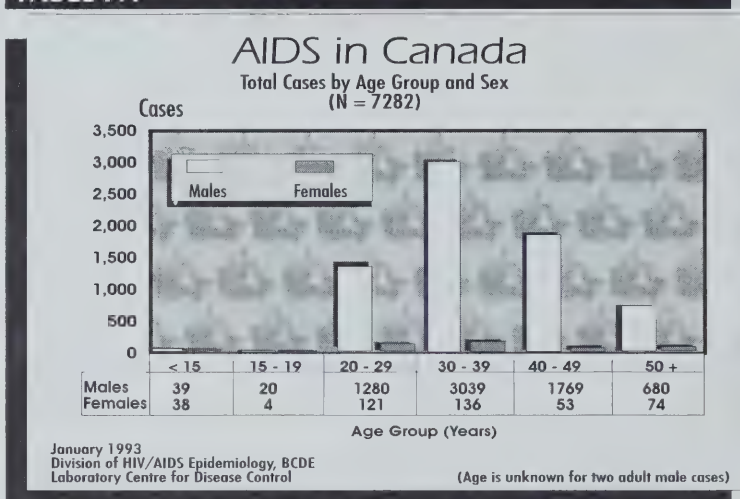


Fig. 2: Illustration of the risk factors for females in Canada.

TABLE IV:



figures used in the remainder of this review refer to the total number of AIDS cases diagnosed since 1979, and do not distinguish between individuals who are alive or dead.

Table IV indicates the incidence of AIDS in Canada by age and sex. Among children (defined as individuals under 15 years of age), as many females as males have been infected. However, after 15 years of age, the disproportionate distribution of AIDS infection between the sexes becomes progressively more obvious, reaching a maximum at 30 to 39 years of age. There are 136 females and 3,039 males in this age group, for a female/male ratio of 1/29.

The risk factors for males and females are illustrated in Figs. 1 and 2, respectively. The abbreviations used in these figures include:

■ **Perinatal:** Born to a mother with

AIDS or who is HIV+.

■ **Inj. Drug Use:** A user of illicit intravenous drugs.

■ **Homo/Bisexual & IDV:** Homosexual or bisexual behavior.

■ **Blood Recipient:** A recipient of blood transfusions.

■ **Blood Products:** A recipient of blood products, i.e. clotting factors.

■ **Heterosexual Activity:** This risk factor has two divisions:

a) Individuals who are sexually active with a person living in or from a country in which the principal route of transmission is heterosexual, i.e. Africa (Zaire) or Haiti; and

b) Individuals who are sexually active with a person who has an identified risk factor, i.e., a female who is sexually active with a bisexual male, or a male who is sexually

TABLE V

Number of Adult Males Possessing Risk Factor

Adult — Males		
Risk Factor	No.	%
Homo/Bisexual	5,633	83
Inj. Drug Use	113	2
Both Of Above	257	4
Blood Transfusion	90	1
Blood Products	136	2
Heterosexual		
a)	173	3
b)	151	2
NIR	264	4
TOTAL	6,817	100

TABLE VI

Number of Adult Females Possessing Risk Factor

Adult — Females		
Risk Factor	No.	%
Inj. Drug Use	37	10
Blood Transfusion	62	16
Blood Products	12	3
Heterosexual		
a)	104	27
b)	134	35
Occup. Exp	1	< 1
NIR	38	10
Total	388	100

active with a female intravenous drug user.

■ **NIR:** This stands for no identified risk factors. In other words, at the point when the individual's AIDS diagnosis was reported to the division of HIV/AIDS epidemiology, no risk factor had been established. The majority of individuals in this group will eventually be recognized as having an identified risk factor, and will be removed from this category. For a number of years, this group has contained — at any one time — about four per cent of adult AIDS cases. The fact that this percentage has remained stable indicates that there are no unknown risk factors.

Table V lists the number of adult

TABLE VII

Number of Women Infected With AIDS Each Year (Pre-1984 to 1992)

AIDS — Adult Females			
Year	No.	Year	No.
pre 1984	12	1988	53
1984	7	1989	67
1985	24	1990	51
1986	26	1991	64
1987	49	1992	35

males known to possess a specific risk factor, and the percentage of the total number of men diagnosed with AIDS who have that risk factor. **Table VI** provides the equivalent information for adult females. Perinatal transmission is featured in **Figs. 1** and **2**. It has been a risk factor for 28 male children and 32 female children.

It is obvious from **Fig. 1** that the dominant risk factor for AIDS in Canada is homosexual/bisexual activity. If it is accepted that perinatal transmission is an accident of birth, and that being a recipient of blood transfusions and blood products are necessities of ill-health, then 94 per cent of males with AIDS derived the condition from behavioral activity. In fact, the figure could be as high as 97 to 98 per cent, if the reasonable assumption is made that most of the men in the NIR category will be assigned to the homosexual/bisexual group. The 94 per cent figure includes the five per cent of males with AIDS who admitted to heterosexual activity with females having identified risk factors.

Although far fewer females have AIDS than males, i.e. 426 versus 6,856, or a ratio of one woman to 16 men, an analysis of their risk factors is equally as revealing. While heterosexual activity is the dominant risk activity for woman, it takes place with males having identified risk factors. Again, if perinatal transmission and blood products and transfusions are considered as non-behavioral factors, 72 per cent of females with AIDS acquired the condition via behavioral activities: 10 per cent through the use of injectable drugs and 62

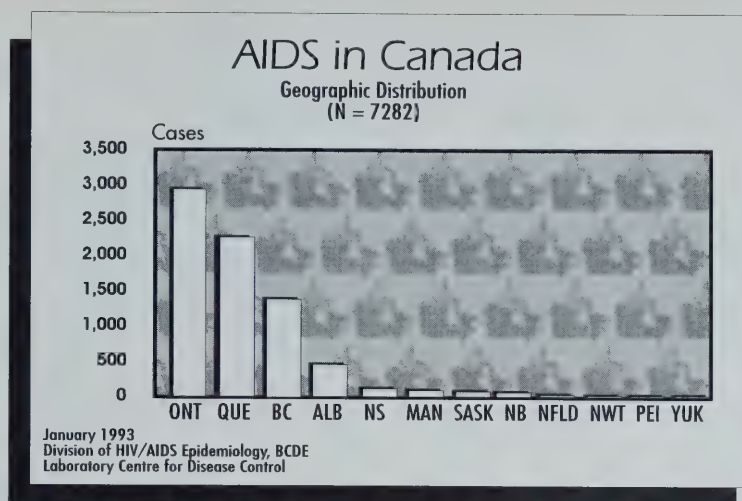


Fig. 3: This chart illustrates the geographic distribution of AIDS in Canada.

TABLE VIII

Number of Males and Females with AIDS by Province

Geographic Distribution				
Province*	Male	Female	Total (%)	Known Deaths
British Columbia	1,317	29	1,346 (18)	890
Alberta	436	20	456 (6)	160
Saskatchewan	58	4	62 (1)	44
Manitoba	83	3	86 (1)	55
Ontario	2,817	117	2,934 (40)	2,220
Quebec	1,959	233	2,192 (30)	1,197
New Brunswick	49	6	55 (1)	22
Nova Scotia	99	10	109 (2)	73
P.E.I.	5	0	5 (<1)	5
Newfoundland	25	4	29 (<1)	18
N.W.T.	6	0	6 (<1)	0
Yukon	2	0	2 (<1)	1
TOTAL	6,856	426	7,282 (100)	4,685

*Cases are attributed to the province where onset of illness occurred.

per cent through heterosexual activity. However, it is reasonable to assume that since perinatal transmission, blood products, and transfusions are readily identified risk factors, the majority of women in the NIR group will be eventually assigned to injection drug use and/or heterosexual activity. Therefore, as many as 80 to 82 per cent of females with AIDS acquired the syndrome via behavioral activities.

Concern has been expressed in the media that the number of women infected with AIDS each

year is increasing. However, **Table VII** indicates that the total has remained at about 50 to 60 new cases per year, with a decline in 1992 to 35.

Fig. 2 shows a single incidence of factor OCC EXP (occupational exposure), which refers to the case of a female biochemist who died in 1990 of AIDS-like complications. This individual had been widowed for 30 years and had denied any subsequent sexual activity. But she developed AIDS-related symptoms in 1988, three years after her retirement. A retrospective investigation

suggested that she had experienced more than one incident during her career when exposure to HIV-positive blood could have occurred. Although illustrated in Fig. 2 as a risk factor, it is more correct to state that this case represents a presumed occupational exposure.²

Fig. 3 illustrates the geographic distribution of AIDS in Canada, while Table VIII lists the exact numbers of males and females with AIDS by province. It is interesting to note that eight provinces have fewer than 10 female cases each. In fact, three of them have no reported cases among women. Although Ontario has the largest number of males with AIDS, Quebec has the largest number of females. This probably reflects the fact that there may be a higher incidence of heterosexual type A activity in Quebec, which has a large Haitian population, than in Ontario.

While it is true that Ontario and Quebec together have 70 per cent of Canada's AIDS cases, it is worthwhile to consider the incidence rates by provincial population, as listed in Table IX. B.C. has

the highest incidence per total population and the highest incidence among males, but the lowest incidence among females. This illustrates that the most significant risk factor in B.C. is homosexual/bisexual activity. The incidence levels per total population and among males are similar in Ontario and Quebec. However, the incidence rate among Quebec females is three times higher than it is among Ontario females. This may be related to a greater incidence of heterosexual type A behaviour or injection drug use among Quebec females than among their Ontario cohorts.

Table X lists the risk factors for adult cases in Canada. Eight per cent of all adult cases are caused by the receipt of blood and blood products or fall into the NIR category. Therefore, 92 per cent of adult AIDS cases are the result of behavioral activities. However, it is reasonable to assume that the majority of NIR cases will eventually be assigned to a behavioral risk factor. Therefore, 95 to 96 per cent of AIDS cases are due to such activities, with four to five per cent

TABLE X

Risk Factors for Adult AIDS Cases in Canada.

AIDS — Adult		
Risk Factor	No.	%
Homo/Bisex	5,633	78
Inj. Drug Use	150	2
Both Of Above	257	4
Blood Transfusion	152	2
Blood Products	148	2
Heterosexual		
a)	277	4
b)	285	4
Occup. Exp.	1	< 1
NIR	302	4
TOTAL	7,205	100

being caused by the consequences of a medical illness or an accident of birth.

The January 1993 *Surveillance Update: AIDS in Canada*¹ introduced an "adjustment" that is meant to correct for delays in reporting AIDS cases to the division of AIDS/HIV epidemiology and for an estimated 15 per cent under reporting of AIDS cases. This "correction" increases the cumulative number of AIDS cases (1979 to 1992) from 7,282 to 10,907. However, it may be no more accurate than previous predictions. For example, Dr. Alistair Clayton, formerly the director general of the Federal Centre for AIDS, stated that by 1990, 20,000 Canadians would have AIDS, while Dr. N. Gilmore, formerly the chairman of Canada's National Advisory Committee on AIDS, indicated that by the late 1980s there would be 105,000 cases of AIDS in Canada.³

Implications

Excessive significance should not be applied to the "adjusted" figures nor to the possibility that the definition of AIDS may be changed. Statistically, both approaches would increase the number of AIDS cases in a similar manner as reducing the driving age would increase the number of deaths from car accidents among teenagers. For example, it has been

TABLE IX

1989 Incidence Rates for AIDS in Canada

Province/ Territory	Total Population Incidence per Million	Total Adults* Incidence per Million	Adult Males* Incidence per Million	Adult Females* Incidence per Million
Alberta	33	46	88	4
British Columbia	72	106	210	1
Manitoba	16	24	48	0
New Brunswick	17	25	42	8
Newfoundland	9	13	16	10
N.W.T.	37	58	111	0
Nova Scotia	20	27	47	7
Ontario	51	74	143	5
P.E.I.	8	12	24	0
Quebec	55	78	141	15
Saskatchewan	8	11	19	3
Yukon	40	56	106	0
CANADA	47	67	128	7

*Adult is defined as being 15-65 years of age.

Where age populations are defined, both the provincial population and the AIDS cases are within the age group. Incidence rates are calculated by dividing the number of cases diagnosed in 1989/1990 in a province by mid-year.



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reported recently that the single most common cause of death among 16 to 21 year olds is driving a car, with 10,000 teenagers having died this way in the last decade.⁴ Decreasing the driving age to 12 would increase the number of deaths. Conversely, increasing it to 21 would decrease the number of deaths. The changing of the age does not alter the fact that car accidents are causing the deaths. Similarly, increasing the number of AIDS cases by altering the definition of AIDS or how the condition is reported will not change the fact that 96 per cent of AIDS cases in Canada are related to preventable behavioral activities.

It is important for dentists and their staff to know what these activities are. By far the most significant risk factor is male homosexuality and bisexuality. According to Dr. Maura Ricketts, a medical epidemiologist with the division of AIDS/HIV epidemiology, "The Canadian epidemic is largely driven by gay men."⁵

Why should this be the case? In study after study, receptive anal intercourse has consistently been reported as the sexual behavior most likely to be associated with HIV infection.⁶ Dr. B.F. Polk, formerly director of the John Hopkins University Multicenter AIDS Cohort Study, has stated that, "In gay men, 95 per cent or more of infections occur from anal receptive intercourse."⁷ A study published in the *American Journal of Epidemiology* found that anal intercourse with rectal trauma (bleeding) may be the only important risk factor.⁸ According to Dr. J. Blatherwick, director of public health for the City of Vancouver, "99 per cent of all sexually-transmitted AIDS cases in Canada are from unprotected anal sex."⁹ The suspected reason for this high correlation is related to the anatomy of the female vagina and the male urethra and rectum. The vagina is resistant to trauma and infection due to its lining of stratified squamous epithelium and lubricating secretions. The urethra and rectum are primarily constructed of columnar epithelial cells. These tissues have a lack of physiologic lubrication, and both are subject to tearing on trauma. Rectal tears permit semen-

borne HIV ready access to the underlying rectal blood vessels, while blood from the ruptured rectum may seep into tears in the urethral lining of the insertive partner.⁶

In the United States, 20 per cent of AIDS cases have been attributed to intravenous drug use, although these infections are confined mainly to the lower-class black and Hispanic population of America's inner cities.⁶ In Canada, about two per cent of AIDS cases are attributed solely to this activity.

However, the figure rises to four per cent when homosexuality and bisexuality are included, presumably for the reasons previously described. Nevertheless, it is worthwhile to describe how the Intravenous Drug Use factor occurs. An intravenous drug user (IDU) will inject a needle into a vein and aspirate blood into the syringe barrel, which usually contains either cocaine or heroin. The mixture of drugs and blood is then passed back into the vein (and hence the circulation) by depressing the syringe plunger. The IDU repeats this process three or four times to ensure that all of the drug has been flushed out of the barrel. He or she then removes the needle and passes it, still attached to the syringe, to another IDU. That individual fills the syringe barrel with the drug and repeats the intravenous infusion with the same needle and the same syringe.

It is easily appreciated that intravenous drug use in this manner is an efficient method of transferring infected blood from one person directly into the circulation of a second individual. This is in direct contrast with an accidental needlestick injury. In such an event, the needle seldom penetrates deep tissues or major blood vessels, it is unlikely that the syringe handle will be depressed, and it would be unusual for the recipient of the needlestick to allow the accident to occur more than once. In fact, not one of the 284 Canadian health care workers exposed to HIV-positive blood from needlestick injuries has become positive for HIV.¹⁰ Although the percentage of Canada's AIDS population who are IDUs is small, it would be prudent not to be complacent about this risk activity. For

example, a recent study among a specific group of Montreal IDUs found that the number testing positive for HIV increased as the investigation continued.¹¹

Perhaps the greatest fear with AIDS has been its potential to spread among heterosexuals not otherwise at obvious risk. This concept gained national prominence early in 1987, when Oprah Winfrey opened one of her popular daytime television shows by stating, "Research studies now project that one in five — listen to me, hard to believe — one in five heterosexuals could be dead from AIDS at the end of the next three years."¹²

It is obvious, five years later, that this prediction was grossly exaggerated. While half of the people infected with HIV will develop AIDS within 10 years, 25 per cent of them develop AIDS within five years.¹³ If heterosexual transmission was really starting to be a significant route of transmission in the mid 1980s, then dramatically increasing numbers of related AIDS cases should now be evident. This hasn't happened, according to the recent Canadian statistics.

Another method of defusing the myth of heterosexual transmission is to consider the data on blood donors. In 1987, the percentage of HIV-positive blood donors in Canada was 0.009 per cent. By 1990, this figure had dropped to 0.004 per cent.¹³ This does not support the idea of a burgeoning heterosexual transmission for the following reason. The route by which AIDS enters the heterosexual population is from the secretly bisexual husband to his unknowing wife.¹³ The wife, as do most blood donors, would not consider herself to be at risk, and would have no reason not to give blood. Therefore, if heterosexual transmission was increasing, then the percentage of HIV-positive blood donors should be rising, not falling. It is pertinent to appreciate that federal government officials readily admit that "there is no evidence of spread [of AIDS] into the general heterosexual population"¹⁴ — a concept supported by the facts and figures presented in this article.

The quarterly surveillance update does not include details on HIV infection in Canada. In 1991,

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the then Federal Centre for AIDS estimated that there were 30,000 HIV-positive individuals in Canada,¹³ although a University of Western Ontario statistician suggested that a more accurate figure would be 12,000 cases.¹³ If it is assumed that approximately 27,500 Canadians are infected with HIV and approximately 2,500 Canadians are living with AIDS, there is an estimated total of 30,000 Canadians who have AIDS or are HIV positive.

According to CDA, there are approximately 15,000 clinical dentists in Canada. Therefore, on a strictly mathematical basis, there are two AIDS/HIV-positive patients per dentist. Obviously, this simple calculation does not consider practices where the treatment of such patients may be more common, but nevertheless, it does illustrate that the number of AIDS/HIV-positive patients should not strain the resources of the dental profession.

Much has been made in the dental literature and lay media about the danger of acquiring AIDS from dental treatment. A review of the official data, which spans more than 10 years experience with the condition, offers no substantiation for the concept that dentistry spreads AIDS. Dentists and their staff should appreciate that the adoption of universal precautions will have a minimal — if any — effect on the behavioral risk activities associated with AIDS. On the other hand, it would appear that dental health care workers do have a responsibility to respond — in a frank, informed manner — to questions regarding AIDS transmission, and adopt behavior that truly reflects the risk of spread from dental practise.

Conclusions

Today, there is every reason to be confident that AIDS in Canada is presenting in the same way as it did in the mid-1980s. More than a decade of experience indicates that AIDS in Canada is, almost exclusively, a condition associated with homosexuality and bisexuality among males. This information should reassure dental health care workers, allow them to approach

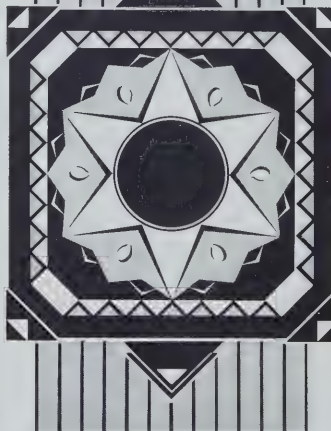
infection control from a rational perspective, and permit them to knowledgeably address the concerns and questions voiced by their patients. ■

Dr. J. Hardie is the head of the department of dentistry at Vancouver General Hospital.

Reprints requests to: **Dr. J. Hardie**, Head, Department of Dentistry, Vancouver General Hospital, 805 West 12th Avenue, Vancouver, B.C. V5Z 1M9

References

1. Health and Welfare Canada, Quarterly Surveillance Update: AIDS in Canada, January, 1993.
2. CCDR, A Case of HIV Infection Possibly Transmitted in an Occupational Setting — Ontario. 18-13:102-103, 1992.
3. Gairdner, W. *The Gay Plague and the Politics of AIDS in The War Against the Family*. Stoddart, Toronto, 1992.
4. *Toronto Globe and Mail*, January 30, 1993.
5. *Toronto Star*, October 6, 1991.
6. Fumento, M. *The Risk of Heterosexual Intercourse in the Myth of Heterosexual AIDS*, Basic Books, Inc. New York, 1990.
7. Thompson, L. Safe Sex in the Era of AIDS. *Washington Post*, March 31, 1987.
8. Chmiel, J. Factors Associated with Prevalent Human Immunodeficiency Virus (HIV) Infection in the Multicenter AIDS Cohort Study. *Am J Epid* 126(4):574, 1987.
9. MacPhail, W. and Benedetti, P. Youth get wrong message on sex danger, critics say. *Hamilton Spectator*, August 26, 1991.
10. National Surveillance of Occupational Exposure to the Human Immunodeficiency Virus (HIV). Laboratory Centre for Disease Control, Health and Welfare Canada, January 1, 1993.
11. CCDR. Progression of Prevalence of HIV-1 Infection among Injection Drug Users in Montreal, Quebec. 18-13:98-101, 1992.
12. Fumento, M. *The Reign of Terror in The Myth of Heterosexual AIDS*. Basic Books Inc., New York, 1990.
13. MacPhail, W., and Benedetti, P. Why we wrote this story. *Hamilton Spectator*, Saturday, August 24, 1991.
14. *Ottawa Citizen*, September 6, 1991.



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Oral Malodor – A Review

Louis Z.G. Touyz, BDS, M.Sc. (Dent.), M.Dent. (POM)
Montreal

ABSTRACT

Oral malodor has many etiologies. The use of accurate descriptor terms to describe this condition facilitates its clinical diagnosis and treatment by health care professionals.

Oral malodor, a generic descriptor term for foul smells emanating from the mouth, encompasses ozostomia, stromatodyso-dia, halitosis (both pathological halitosis and physiological halitosis) and fetor oris or fetor ex ore. These latter terms, in turn, denote different sources of oral malodor. The terms ozaena, fetor narium, dysosmia, hyperosmia, caco-gueusia, and dysgeusia are also related to oral malodor, and assist in accurately describing a clinical presentation.

Systemic pathological states, such as diabetes mellitus, uremia and hepatic diseases, induce metabolic products that are detectable as oral smells. Local oral conditions produce volatile sulphur compounds and other breakdown products that intensify oral malodors. The clinical labelling and interpretation of different oral malodors both contribute to the diagnosis and treatment of underlying disease. This article stresses the relationship between smell and taste, emphasizes specific meanings for related oral malodor terms, reviews smell comprehension and indicates some of those commonly-encountered associated clinical conditions.

SOMMAIRE

L'haleine fétide a plusieurs étiologies. L'emploi de termes cliniques précis facilite le diagnostic et le traitement pour les spécialistes des soins de santé.

Haleine fétide est un terme descriptif générique qui désigne les mauvaises odeurs émanant de la bouche. Il englobe plusieurs notions: ozostomie, stomatodysodie, halitose (halitose pathologique et halitose physiologique) ainsi que foetor oris ou foetor ex ore, termes qui désignent différentes catégories d'haleine fétide. Les termes ozène, foetor narium, dysosmie, hyperosmie, cacogueusie et dysgueusie se rapportent également à l'haleine fétide et permettent de décrire avec précision un certain nombre de problèmes cliniques. Les états pathologiques systémiques comme le diabète mellitus, l'urémie et les maladies hépatiques induisent des produits métaboliques détectables sous forme d'odeurs. Les problèmes oraux locaux produisent des composés volatiles du soufre et autres produits de dégradation qui intensifient les mauvaises odeurs. L'étiquetage et l'interprétation clinique des différentes formes d'haleine fétide contribuent au diagnostic et au traitement des maladies correspondantes. Cet article porte sur le rapport entre odeur et goût, instate sur les significations spécifiques des différents descriptifs de l'haleine fétide, examine la compréhension des odeurs et les rapproche des pathologies cliniques les plus courantes.

Introduction

Oral malodor, which is commonly noticed by patients, is an important clinical sign and symptom that often aids clinicians in establishing a diagnosis of underlying pathology.¹ Many terms are used to describe oral malodor and many practitioners frequently use these terms imprecisely, with a resultant lack of clarity, confusion or ambiguity as to the kind of smell, its etiology, interpretation and significance. This article reviews the terminology related to the various types of oral malodors and associated conditions, presents a clarifying compendium of significant terms, and discusses some aspects of osmology relative to bad breath in general dentistry.

Oral malodor is a generic descriptor term for foul smells emanating from the mouth. The term does not imply any source or causation, per se. It is an aid to diagnosis and includes ozostomia, stomatodysodia, halitosis, and fetor ex ore/fetor oris² (Fig. 1). It is important for clinicians and dentists to decide which of these oral malodors exist in the patient, as each implies different etiologies and demands different management.

Ozostomia (from the Greek ozo, to smell, and stoma, the mouth) refers to a putrid smell that is detected from the mouth but derives from the upper respiratory tract, in particular the nasal and sinus cavities, the pharynx and larynx.³

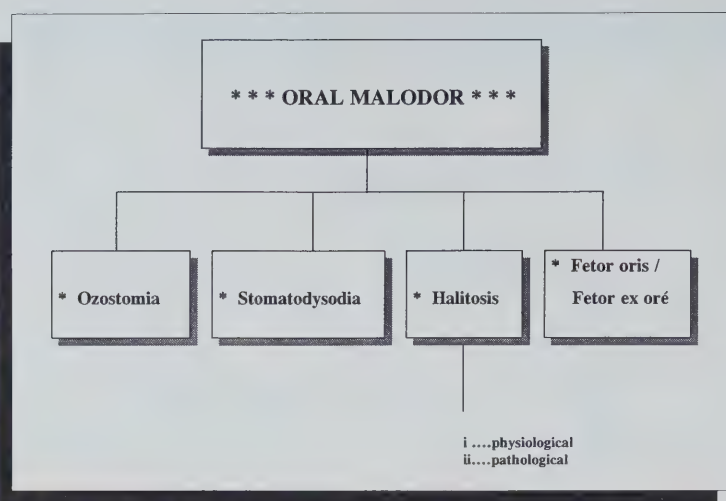


Fig. 1: Types of oral malodor.

The etiology of ozostomia includes rhinitis, sinusitis, pharyngitis, laryngitis and tonsillitis, as well as any other inflammatory, neoplastic or putrefying condition of the upper respiratory tract, e.g. a nasal carbuncle, polyps, or carcinoma.⁴

Stomatodysodia (from the Greek stoma, mouth, and disodia, bad odor) refers to foul breath from the mouth originating from local areas in the lower respiratory tract, particularly below the caryna from the bronchi, bronchioles and alveoli, or other contiguous parts of the lung, e.g., pleura.^{3,5}

The etiology of stomatodysodia includes infective/necrotic processes of the lower respiratory tract, such as bronchitis, bronchiectasis, pulmonary abscess, tuberculosis, pneumonia, emphysema, secondary infection and necrosis of neoplasms, pulmonary infarcts with all its sequelae, stagnation of sputum, and smells from inhaled smoke.

Halitosis (from the Latin halitus, breath, and osis, condition) refers to a stench on the breath stemming from systemic metabolic conditions, including the gastrointestinal tract and its contents, as well as generalized pathophysiological conditions that initiate transport of smelly substances via the blood supply to the lungs or gut, which then act as an excretory or secretory mechanism for one or more specific products redolent of the cause.

Halitosis may be physiological or pathological.^{6,7} Physiological halitosis will be of a temporary nature and exists when volatile odoriferous hematologically-borne substances are released into the lungs from food, notably herbs, spices, curries, and selected vegetables such as onions, garlic, radishes, turnips, and leeks; or from flavory drinks, such as tea and coffee, and particularly those containing unique derivatives of water and alcohol soluble esters and polyphenols. These include wine, brandy, whisky, liqueurs, and beer. Physiological halitosis will also occur with dehydration, starvation, constipation, loose stools or other conditions that may affect the gut, most of which are reversible.⁷

Pathological halitosis occurs by essentially the same mechanism as physiological halitosis, namely by pulmonary release of hematologically-borne substances. This halitosis is not easily reversible, however, and tends to persist without treatment. It stems from regional or systemic pathology, such as diabetic ketosis (from producing acetoacetic acid, hydroxybutyric acid, acetone and other ketones), uremia, gastritis, gastric ulcer, oesophagitis, pyloric stenosis, or hepatitis.^{8,9}

Fetor oris/fetor ex ore (from the Latin fetor, an offensive odor [French, feteo, to stink] and os, gen. oris, plural ora, mouth) is an offensive odor emanating from the

mouth, which arises from sources in the mouth.³

Etiology

The commonest source of fetor oris is oral microbiota and their action on oral debris, blood or oral tissues. Oral bacterial plaques adhering to the teeth are the major offenders. Consequent conditions that result from various kinds of mature plaques reacting on the teeth or the supporting soft tissues and bone include dental decay, non-specific gingivitis, periodontitis, gingival and alveolar abscesses, local soft tissue necrosis, degenerating food residues, acute necrotizing ulceromembranous gingivitis, and calculus adherent on natural teeth and prostheses.^{8,10} Many local or systemic pathological states manifest in the mouth, and include conditions such as acute herpetic gingivostomatitis and other oral viral infections, erythema multiforme, benign mucous membrane pemphigoid, hemorrhagic diatheses, oral neoplasms, salivary gland diseases, and healing trauma, all of which are frequently associated with fetor oris. Poor oral hygiene, morning breath, hunger breath, and menstruation breath all result from changes in the oral microbiota and may manifest discernable bad breath.¹¹⁻¹³

Similarly, changes in the oral microbiota resulting from the use of antibiotics frequently manifest fetor oris.¹⁴ Other clinical findings associated with oral malodor may be detected or related to smell and/or taste at the time of presentation, and defining these findings certainly contributes to the comprehensive description of a presenting case. Descriptive terms include:

Ozaena: Any disease characterized by intranasal crusting, mucosal atrophy and a fetid odor from the nose.

Fetor narium: A bad smell coming from the nose.

Dysosmia: A perversion of smell, frequently impairment.

Hyperosmia: An increased subjective sensitivity to odors.

Cacosmia: The subjective, consistent, perception of a real or imagin-



ed distinctly putrefactive disagreeable odor. A variety of parosmia.

Parosmia: A perversion of the normal sense of smell, usually, but not always, to unpleasant odors that do not exist. Also called parosphresia.

Anosmia: The inability to detect any smell.

Euosmia: A pleasant fragrance, normal olfaction.

Hypereuosmia: The inability to differentiate between foul odors and pleasurable fragrances, perceptions being mainly pleasant.

Cacogeusia: A bad taste.

Dysgeusia: A perversion of taste.

Discussion

Smell and taste are interrelated in that taste or smell in isolation do not function fully if any of the receptors or innervations are blocked to either sensation — i.e., disruption of one sense compromises the function of the other.¹⁵ The olfactory nerve (first cranial nerve) for smell, and the lingual branch of the trigeminal (fifth) nerve, the corda tympani branch of the facial (seventh), the lingual portion of the glossopharyngeal (ninth) and a branch to the palate and epiglottis from the vagus (tenth) nerve, all must be functionally intact to ensure ideal function of smell and taste.¹⁵ The physiology, structure and function of smell and taste sensations have been comprehensively described and reviewed elsewhere.¹⁶

Any substance that can be detected from a distance through a perceived olfactory experience is said to smell. The emotional conscious reaction induced, provoking an overall stimulation, acceptance and pleasure, or irritation, revulsion and rejection, dictates whether smells are classified as scents, aromas and fragrances, or as odors, stinks and stench, respectively.¹⁷

Aromas and fragrances are a product of numerous substances, individually acceptable, but collectively in the right concentrations evoking an overall very pleasant reaction.¹⁷

With oral malodor, a number of

individually bad-smelling substances combine to produce a stink that is unpleasant. Detecting, appreciating and describing the stink can help to define its source and establish a diagnosis. Oral malodor could therefore be a feature of some oral or non-oral systemic disease.¹ However, there are healthy individuals who complain of having bad breath that no one else can smell and for which no local or systemic condition can be found. Although this is sometimes referred to as "delusional halitosis," it would more accurately be described as delusional cacosmia, and is considered a monosymptomatic hypochondriacal disorder.¹⁸ A malodor is often not detected subjectively due to the phenomenon of olfactory adaptation. Approximately 80 per cent of the oral malodor that manifests as feto oris originates from the mouth,¹⁹ and physicians should readily refer these patients to dentists for appropriate treatment and oral hygiene management.

Hydrogen sulphide (H_2S) and mercaptan (CH_3SH) are most commonly associated with oral malodor, but other volatile sulphur compounds are also involved, such as dimethylsulphide.²⁰ The intensity of oral malodor feto oris increases eight times or more in mouths affected by periodontal disease. This feto oris is caused by an increase in volatile sulphur compounds and an increased mercaptan/hydrogen sulfide ratio.²¹ 2-Ketobutyrate is a product of the essential sulphur containing amino acids, namely cysteine and methionine, and is metabolized to mercaptan. Bacterial enzymes such as L-cystine desulhydrases and 1-methionine gamma-lyase break down cystine, cysteine, and methionine to produce mercaptan.²²

Many oral microbes found in saliva and mature climax community subgingival bacterial plaques possess these and other similar enzymes that produce mercaptan and other volatile sulphur compounds.¹³ Sources other than the mouth produce oral malodor by ozostomia, stomatodysodia or halitosis, as explained above. Break-down products like indoles, skatole ammonia and urea all con-

tribute to oral malodors.¹³

Bacterial stagnation in grooves, fissures and interpapillary areas on the dorsoposterior part of the tongue is a major source of malodor feto oris.²³ Invading bacteria flourish under gingival opercula, flaps and tags associated with partially-erupted third molars. The removal of these teeth and the offending surrounding soft tissue markedly reduces oral malodor feto oris.²⁴ The removal or controlled reduction of bacteria by mechanical or chemical means will reduce oral malodor — for example, zinc-containing mouth rinses are effective as are chlorhexidine mouthwashes.^{25,26}

Oral malodor is an ubiquitous and common condition. Since this is a distressing symptom for patients, the need to diagnose the underlying cause is very important. Once diagnosed, the appropriate therapy can be instituted. The cause, if possible, should be defined by the treating doctor so as to help the patient.

Management of oral malodor is therefore dependent on diagnosing the foul breath as ozostomia, stomatodysodia, physiological or pathological halitosis, or feto oris. Therapy should then be appropriately and specifically directed to the cause of the oral malodor to ameliorate or totally eliminate the condition.

Establishing the full character of an oral malodor is not without some slight risk, because viable bacterial and viral infections are known to occur through droplet spread.^{27,28} Although the human immunodeficiency virus has not been reported to infect people via this mechanism, in light of the transmissibility of microbiota and viruses, it would be most prudent to detect smells through an orofacial mask. Clear and precise descriptions of oral malodors facilitate good general medical practice, but more research²⁹ is needed to produce simple and safe bedside clinical tests,^{30,31} which could easily detect, classify and quantify malodorous substances so that oral malodor could be used safely and more successfully in diagnosing, monitoring, and treating disease.



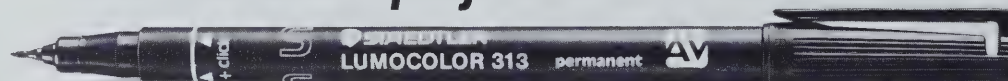
Dr. Touyz is the director of the division of periodontology, faculty of dentistry, at McGill University in Montreal.

Reprint requests to **Dr. Touyz**, Faculty of Dentistry, McGill University, 740 Docteur Penfield, Rm. 414, Montreal, P.Q. H3A 1A4.

References

1. Tessier, J.F. and Kulkarni, G.V. Bad breath, etiology, diagnosis and treatment. *Oral Health* 81:19-24, 1991.
2. Kleinberg, I. and Westbay, G. Oral malodor. *Crit Rev Oral Biol Med* 1:247-260, 1990.
3. Stedmans Medical Dictionary. Ed. 24. Baltimore and London, Williams and Wilkins, 1982.
4. Fletcher, S.M. and Blair, P.A. Chronic halitosis from tonsilloliths: a common etiology. *J LA State Med Soc* 140:7-9, 1988.
5. Hopkins, J.M. The suppurative lung diseases. In: *Oxford Textbook of Medicine*. Ed. 2. D.J. Weatherhall, J.G. Ledingham and D.A. Warrell, eds. Oxford, Melbourne, New York, Oxford University Press, ch. 15:15.100-15.106, 1987.
6. Bogdasarian, R.S. Halitosis. *Otolaryngol Clin North Am* 79:111-117, 1986.
7. Rosenberg, M. and Gabbay, J. Halitosis — a call for affirmative action. *Refuat Ha Shinayim* 5:13-15, 1987.
8. Tonzetich, J. Production and origin of oral malodor: a review of mechanisms and methods of analysis. *J Periodont* 48:13-20, 1977.
9. Madarikan, B.A. and Bees, B.I. Halitosis and gastric outlet obstruction in infants. *Br J Clin Pract* 44:419-423, 1990.
10. Kostelc, J.G., Preti, G., Zelson, P.R. et al. Oral odors in early experimental gingivitis. *J Periodont Res* 19:303-312, 1984.
11. Tonzetich, J. Oral malodor: an indicator of health status and oral cleanliness. *Int Dent J* 28:308-319, 1978.
12. Natty, F. Dry mouth and halitosis. *Practitioner* 234:603-606, 1990.
13. McNamara, T.F., Alexander, J.F. and Lee, M. The role of micro-organisms in the production of oral malodor. *Oral Surg* 34:41-48, 1972.
14. Ogunwande, S.A. Halitosis and abuse of antibiotics. Report of a case. *Ceylon Med J* 34:131-133, 1989.
15. Bradley, R.M. Physiology of taste receptors. Physiology of olfactory receptors. In: *Basic Oral Physiology*. R.M. Bradley, ed. Chicago and London, Year Book Medical Publishers. ch. 3, 21-24; ch. 4, 43-57, 1981.
16. Jenkins, G.N. Sensations arising in the mouth. In: *Physiology and Biochemistry of the Mouth*. G.N. Jenkins, ed. Oxford and London. Blackwell Scientific Publications (67 References to Basic Physiology), 1978, pp. 542-570.
17. Noble, A.C., Arnold, R.A., Buchsenstein, J. et al. Modification of a standard system of wine aroma terminology. *Am J Enol Vitic* 38:143-146, 1987.
18. Iwu, C.O. and Akpata, O. Delusional halitosis. Review of the literature and analysis of 32 cases. *Br Dent J* 168:294-296, 1990.
19. Tonzetich, J. Sources measurement and implication of oral malodor. *J Dent Res* 70:337, 572 (abstract), 1991.
20. Schmidt, N.F., Missan, S.R. and Tarbet, W.J. The correlation between organoleptic mouth - odor ratings and levels of volatile sulfur compounds. *Oral Surg* 45:560-567, 1978.
21. Kostelc, J.G., Zelson, P.R., Preti, G. et al. Quantitative differences in volatiles from healthy mouths and mouths with periodontitis. *Clin Chem* 27:842-845, 1981.
22. Yaegaki, K. and Suetaka, T. Fractionation of the salivary cellular elements by Percoll density gradient centrifugation and the distribution of oral malodor precursors. *Shigaku* 77:269-275, 1989.
23. Rosenberg, M. Bad breath, diagnosis and treatment. *Univ Toronto Dent J* 3:7-11, 1990.
24. Rajashuo, A., Torkko, H. and Meurman, J.H. Effect of extractions of lower third molars on periodontopathogens. *J Dent Res* 70:367, 817 (abstract), 1991.
25. Grossman, E., Meckel, A.M., Isaacs, R.L. et al. A clinical comparison of antimicrobial mouth rinses: effects of chlorhexidine, phenolics and sanguinarine on plaque and gingivitis. *J Periodont* 60:435-440, 1989.
26. Pitts, G., Brogdon, C., Hu, L. et al. Mechanism of action of an antiseptic, antiodor mouthwash. *J Dent Res* 62:738-742, 1983.
27. Miller, R.L. and Micik, R.E. Air pollution and its control in the dental office. *Dent Clin N Am* 22:453-476, 1978.
28. Mosley, J.W. Hepatitis infection. *New Engl J Med* 293:729-734, 1975.
29. Rosenberg, M. Halitosis — the need for further research and education. *J Dent Res* 71:424, 1992.
30. Rosenberg, M., Kulkarni, G.V., Bossy, A. et al. Reproducibility and sensitivity of oral malodor measurements with a portable sulphide monitor. *J Dent Res* 70:1436-1440, 1991.
31. Phillips, M. Breath tests in medicine. *Scientific Am* 74-79, July 1992.

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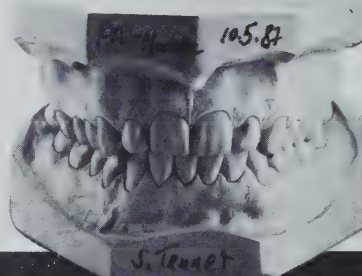
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The Scientific Program will be the most dynamic ever, and is designed to meet the needs of all dentists, dental hygienists, dental assistants, dental technicians and office personnel. Over 100 lecturers of international calibre have been invited and have confirmed their participation for FDI

1994. During the course of the scientific program, great emphasis will be given to hands-on courses, live television presentations and limited attendance courses to give participants an opportunity to concentrate on specific areas of interest to them.

The Social Program will have festivities occurring daily for all participants at the meeting. There will also be Pre- and Post-Congress Tours to take visitors on a journey of wonder through much of Canada's spectacular and natural beauty. For those delegates travelling with their families, an elaborate Spouses' Program with visits and one-day tours will be offered as well as a Children's Program guaranteed to be fun and adventurous.

The CDA has secured city-wide accommodation in 45 hotels for convention delegates and CDA Conventions will act as the housing bureau for all delegates attending the 1994 FDI Congress.

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Some city attractions

In the middle of the lush, green and beautiful 405 hectares called Stanley Park (right next to downtown Vancouver) is an attraction that is a thrill for kids of all ages – the Vancouver Aquarium, where killer whales leap and frolic in their 2.5 million gallon habitat. The Aquarium features more than 8,000 aquatic animals, with several daily shows.

Moving on downtown, the family, or any part of it, can enjoy the hands-on, high tech displays at the Arts, Sciences and Technology Centre, or the nearby Beatles Museum. Also, next to the police station, the Vancouver Police Centennial Museum displays more than 100 years of history and intrigue. And then there is the University of British Columbia's M.Y. Williams Geology Museum of dinosaurs, minerals and other natural wonders created during this planet's 4.5 billion years of evolution.

City of gardens

At the heart of the city's bustling Chinatown, the visitor can pause for a few meditative moments in the Dr. Sun Yat-Sen Classical Chinese Garden. In the Ming Dynasty style, it is the only authentic classical garden created outside China.

The Botanical Gardens at the University of British Columbia includes alpine flora from every continent, a unique pharmaceutical garden of 16th century design, and Nitobe, an authentic Japanese garden. Another that should not be missed is the Bloedel Floral Conservatory. The Capilano Suspension Bridge stretches 137 metres (450 feet) above gardens and waterfalls in its setting of mountains.

Northwest Indian arts

There is a world renowned collection of Northwest Indian arts to see in a display in the University of British Columbia's Museum of Anthropology. From intricately-carved jewelry and ceremonial objects of gold, argillite and bone, to huge, eerie totem poles. Other art and artifacts displayed here have been gathered from around the world. The museum itself is considered an architectural masterpiece. Outside, the tourist can walk through a recreated Haida village.

In suburban Richmond, just south of the city, the visitor will find North America's most exquisite example of Chinese palatial architecture. The glittering Buddhist Temple houses artifacts of superlative Chinese workmanship. Take time for a Buddhist tea ceremony.

Area attractions

Vancouver is the departure point for scenic cruises aboard stately steamships, whether to Vancouver Island, Seattle or the Alaska Cruise via the famous "Love Boat" line.

On Vancouver Island, the visitor can enjoy Victoria's old world elegance, including the stately Empress Hotel and the provincial Parliament Building, or travel to view the grandeur and colour of the world-famous Butchart Gardens, just north of Victoria.

A short drive from Vancouver brings the visitor to Garibaldi Provincial Park with its glaciers, lava flows and alpine meadows.

Whistler Village with its two huge mountains and a wide range of modern facilities is not only internationally famous as a ski resort. The European style village at the base of the mountains has memorable charm. The resort offers windsurfing, hiking and golfing in summer. Golfers can enjoy their favorite activity on the Arnold Palmer designed 18-hole course.

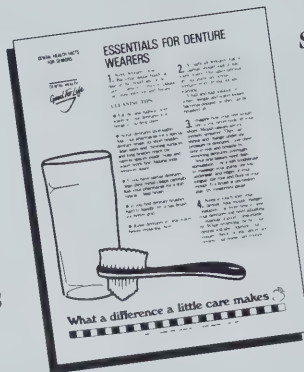
East of Vancouver is the strikingly beautiful and agriculturally-productive Okanagan Valley. Eleven of the province's 13 wineries are to be found there. Many vineyards boast beautiful hilltop views of the lakes and mountains, and welcome tours. Orchards are abundant throughout this region and fruit can be found at roadside stands in season. More than 650 animals of the world lope and waddle through the sprawling Okanagan Game Farm, south of Penticton.

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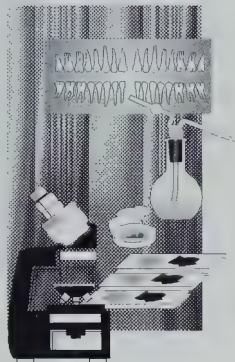
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Vital Fluorescence: A New Measure of Periodontal Treatment Effect

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E. Brownstone, Dip DH, M.Ed.

M. Stoddart, RMLT

ABSTRACT

The purpose of the current study was to determine, by means of a fluorescence test, the ratio between vital and dead bacteria in dental plaque before and two weeks following professional dental prophylaxis. A solution of fluorescein-diacetate (FDA) and ethidium bromide (EB) in normal saline was applied to plaque samples from 82 healthy adults both prior to and 14 days following professional prophylaxis. Living microorganisms were colored green by the FDA while the EB introduced a red color into the nucleic acids of dead cells. The relationships between the vital fluorescence scores and standard clinical measures, plaque index (PII) and gingival index (GI) were analyzed. Two weeks following professional prophylaxis, a significant decrease was observed in the PII scores (0.9 ± 0.4 , Day 0; 0.6 ± 0.3 , Day 14, $p < 0.001$) and the GI scores (1.1 ± 0.2 , Day 0; 0.7 ± 0.3 , Day 14, $p < 0.001$), while there was a statistically significant increase in the vitality of the dental plaque (74 per cent ± 9 , Day 0; 78 per cent ± 7 , Day 14, $p < 0.001$). The vital fluorescence (VF) tech-

nique may provide an additional explanation of periodontal treatment effect.

SOMMAIRE

Cette étude avait pour but de déterminer, au moyen d'un test à fluorescence, le ratio entre les bactéries vitales et les bactéries mortes contenues dans la plaque dentaire avant une prophylaxie professionnelle et deux semaines plus tard. À de la plaque prélevée sur 82 sujets adultes en santé, on a donc appliqué, avant la prophylaxie et quatorze jours plus tard, une solution de fluorescéine-diacétate (FD) et de bromure d'éthyle (BE) diluée dans une solution salée ordinaire. Sous l'effet de la FD, les micro-organismes vivants se coloraient en vert, tandis que sous l'effet du BE, les acides nucléiques des cellules mortes viraient au rouge. On a ensuite étudié les rapports entre les taux de cellules vitales et les mesures cliniques standards, l'indice de plaque (IP) et l'indice gingival (IG). Deux semaines plus tard, on a noté une baisse considérable de l'indice IP [de 0,9 à 0,4 le jour 0; de 0,6 à 0,3 le jour 14; $p < 0,001$] et de l'indice IG [de 1,1 à 0,2 le jour 0; de 0,7 à 0,3 le jour 14; $p < 0,001$],

ainsi qu'une importante hausse dans la vitalité de la plaque [74 p. cent ± 9 , le jour 0; 78 p. cent ± 7 , le jour 14; $p < 0,001$]. Il se peut que le test à fluorescence vitale offre une explication supplémentaire touchant les effets des traitements périodontaux.

Introduction

Numerous clinical, microbiological and histological investigations have demonstrated the causal relationship between dental plaque and gingivitis.¹⁻⁶ Evidence of the direct relationship between the plaque index (PII)⁷ and gingival index (GI)⁸ led to controlled clinical studies, which have illustrated the impact of periodontal therapy, including professional prophylaxis, on the establishment and maintenance of periodontal health.⁹⁻¹³

Recent studies have incorporated a VF technique to evaluate the effect of antimicrobial rinses not only on plaque and gingival health, but also on the vitality of the bacteria in dental plaque.¹⁴⁻¹⁷ The VF technique provides a simple, reproducible and direct estimate of

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TABLE I

Grading used for Vital Fluorescence (VF) scoring under light microscopy

Recording	Visualization	Per Cent	Interpretation
++	definitely green	80 - 100	extremely vital
+	predominantly green	60 - 80	very vital
+-	half green/half red	40 - 60	somewhat vital
--	predominantly red	20 - 40	very nonvital
--	definitely red	0 - 20	extremely nonvital

the ratio between living and dead bacteria (i.e. vitality ratio) in a sample of dental plaque.

The purpose of the current study was to determine, two weeks after prophylaxis, the effect of professional plaque removal on plaque accumulation and gingival health, as well as the procedure's effect on the vitality of the existing dental plaque as measured by the VF technique.

Materials and Methods

Eighty-two healthy volunteers participated in the study. The 40 female and 42 male participants ranged in age from 19-44 years. They were either medical or physiotherapy students, or non-dental laboratory staff from the Health Sciences Centre or the University of Manitoba. Medical histories and intraoral examinations were performed at recruitment to exclude individuals who presented with periodontitis, orthodontic or prosthodontic appliances, or systemic disease. The use of antibiotics during the previous three months or any medical condition involving oral manifestations resulted in exclusion from the study. Informed consents were signed by the first 82 eligible candidates.

On Day 0, prior to scaling and polishing, a supragingival plaque sample was obtained with a sweep of a periodontal probe along the gingival margin of the disto-vestibular surface of one or several maxillary premolars or molars and the PII scores of these areas were simultaneously recorded. The pooled sample was placed on a glass slide and prepared as described previously for VF analysis.^{14,15} Briefly, a solution of fluo-

resceindiacetate (FDA) and ethidium bromide (EB) in normal saline was applied to the plaque sample. FDA colors the living microorganisms green, while EB introduces a red color into the nucleic acids of dead cells. The specimen was viewed under a fluorescence microscope, at 250X, using a 5 X 5 interval ocular grid. The middle of the sample was located at a low magnification, the magnification was adjusted, and the site scored. One examiner performed all VF assessments (intra-examiner reliability > 95 per cent). The sample was then further examined in four additional fields at diagonals to the centre, yielding a total of 125 scores per sample. A percentage derived from the mean of these scores was obtained indicating the vitality of that particular sample (Table I).

At baseline (Day 0), clinical measurements included the PII, to assess accumulation of supragingival dental plaque, and the GI, to evaluate the gingival status. Measurements were recorded for four surfaces (mesial, distal, vestibular and lingual) of 28 teeth, excluding the third molars. One examiner performed all clinical examinations with an intra-rater reliability of > 95 per cent.

On day 0, following the clinical and microscopic measurements, all participants received a professional prophylaxis that included the mechanical removal of supra/subgingival calculus and plaque, and smoothing of the clinical crown using periodontal cures and rubber cup coronal polishing. The instrumentation was carried out by registered dental hygienists. Although no oral hygiene instruction was provided during

the study, individuals were asked to continue their usual self-performed, non-supervised mechanical oral hygiene regimen for the next two weeks. To standardize oral hygiene armamentarium and to eliminate potential variations in adjunctive aids, all participants were asked to use a specified toothbrush* and dentifrice** exclusively.

The subjects returned two weeks post prophylaxis (Day 14), at which time microscopic and clinical data were again collected. On completion of the study, individualized oral hygiene instructions and coronal polishing were provided for all subjects.

The relationship between the PII/GI and VF was submitted to Pearson's correlation. The relationship between each of these parameters and time was submitted to the analysis of variance.

Results

Prior to professional prophylaxis at Day 0, the mean baseline PII score was 0.89 ± 0.39 . Following the professional removal of dental calculus and plaque, and two weeks of unsupervised mechanical plaque control, subjects exhibited a very highly significant ($p < 0.001$) reduction in PII to 0.61 ± 0.29 (Fig. 1). Similarly, the baseline GI value, 1.11 ± 0.23 , also decreased significantly ($p < 0.001$) following periodontal instrumentation to 0.66 ± 0.33 at Day 14. The vitality of the bacteria, however, as measured by the VF technique, was significantly ($p < 0.001$) higher two weeks following professional prophylaxis (Day 14), 77.9 per cent ± 7.1 , than at Day 0, 74.1 per cent ± 8.9 .

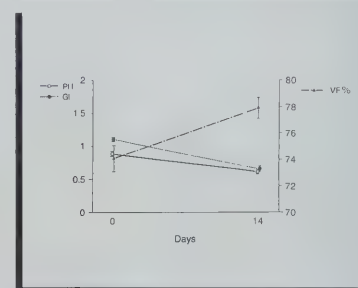


Fig. 1: Mean PII, GI and VF scores and (+ or - SE) prior to professional prophylaxis at Day 0 and, following two weeks of unsupervised mechanical plaque control, at Day 14.

Discussion

Dental plaque, allowed to accumulate on the tooth at the gingival margin, results in gingival inflammation. Investigators have attempted to identify effective means of monitoring plaque accumulation and the development of gingivitis. Among the most frequently employed means of monitoring or measuring plaque accumulation and the gingival status are the PII and GI indexes, which were developed three decades ago.^{7,18}

More recently, the VF technique has been used in conjunction with the PII and GI to measure the effectiveness of chlorhexidine digluconate, Listerine, Meridol and Plax rinses in reducing plaque and gingivitis.¹⁴⁻¹⁷ Using the VF technique, it has been shown that all subjects presented with 67-70 per cent viable bacteria at baseline. These scores remained in this range during the study period for the placebo and Listerine groups, but a significant decrease in vitality was observed after one day's rinsing by the Meridol group (VF = 54 per cent) and chlorhexidine group (VF = 41 per cent). The VF scores illustrate the antimicrobial effects of the agents.¹⁵

The current study employed the VF technique along with the PII and GI to evaluate the effects of professional mechanical periodontal therapy. The results support previous findings,^{9,12,19-23} which demonstrate that mechanical therapy is able to reduce the levels of plaque and gingivitis. The current study also suggests that long-standing mature bacteria was eliminated mechanically (at Day 0) and the minimal plaque that was identified after two weeks contained a significantly greater percentage (78 per cent versus 74 per cent) of newly-formed viable microorganisms. It is yet to be determined whether this difference is of clinical significance, although it is highly statistically significant ($p < 0.001$).

Scaling is known to reduce suspected pathogenic microorganisms below cultivable levels at one hour posttreatment. Although there is a trend to return to baseline levels, the extent of plaque accumula-

tion and gingival inflammation has been shown to remain improved for two to seven weeks.^{9,24} Evidence from the current study confirms the effectiveness of the professional prophylaxis over the period of two weeks. A return to baseline levels of PII, GI and VF might have occurred had the study period extended an additional seven to 14 days. Other researchers have shown that when optimal oral hygiene is not maintained following a professional prophylaxis, plaque scores return to baseline levels.¹¹

The current study's low post-treatment GI and PII scores demonstrate that for individuals in relatively good periodontal health, the benefits of scaling and polishing remain at Day 14. These findings support earlier studies that suggest early-forming plaque appears to be conducive to gingival health.¹ Although the surface coating, as well as dental plaque removed by mechanical instrumentation, begin to reform within seconds after prophylaxis,²⁵ gingival health may be maintained because the early flora is dominated by streptococci and other health compatible bacteria.²⁵⁻²⁷ Once periodontal health is achieved, individuals may, through personal plaque control, prevent simple health compatible flora from developing into a more complex, gingivitis-associated plaque.²⁸

It is proposed that since participants in the study had not received mechanical debridement for at least six months prior to the study, the lower percentage of viable bacteria (74 per cent) and higher PII and GI found at baseline could be attributed to the mature nature of the existing flora, which included more nonviable microorganisms. The percentage of viable bacteria at baseline (74 per cent) in the current study differs somewhat from other studies. Netuschil's findings¹⁴ were higher (80 per cent) perhaps because the baseline examination took place one to three days post-prophylaxis.

The percentage of viable bacteria in the present study might have been even higher at Day 14. Due to scarcity of plaque on the vestibular surfaces, samples of pooled plaque were frequently taken from surfaces located more approxi-

mally. This was done in order to obtain a sufficient quantity of material on which to perform the VF technique. Such action may have artificially increased the percentage of nonviable bacteria at Day 14, since most subjects reported leaving approximal plaque undisturbed (i.e. did not floss) for the two-week period. Had oral hygiene instructions been given, and had participants carried out daily interproximal cleaning, it is probable that the percentage of nonviable bacteria at Day 14 would have been lower.

The present findings illustrate a reduction in plaque and gingivitis two weeks following treatment and an increase in the vitality of the existing plaque. Improved gingival health appears to be the result of decreased levels of bacterial plaque. The role of the plaque vitality should be considered an additional explanatory variable in gingival response to professional prophylaxis. Future studies assessing the effectiveness of periodontal treatment should target populations with greater variation in periodontal health than in the current study. It would also be beneficial to employ a more powerful statistical test such as the general linear model (multiple regression) to determine the strength of the relationship between the dependent variable, gingival health and explanatory variables, plaque index and vitality ratio.

Summary

The direct cause of gingivitis has been shown to be the accumulation of dental plaque that remains in contact with the gingival tissue.¹ Participants in the current study presented at Day 0 with light plaque (PII: 0.89), correspondingly mild gingivitis (GI: 1.11), and a VF score of 74.1 per cent. Following professional prophylaxis and two weeks of unsupervised plaque control, the PII scores improved significantly ($p < 0.001$) to 0.61, as the participants were able to maintain a significantly ($p < 0.001$) improved gingival status (GI: 0.66). Reduced quantity of bacterial plaque resulted in decreased GI scores. The strength of the relationship between plaque vitality and





periodontal treatment effect is more equivocal, although a highly statistically significant increase in plaque vitality was observed two weeks following professional prophylaxis ($p < 0.001$). The vitality ratio may be an additional independent/explanatory variable in describing gingival response to traditional professional prophylaxis. Future studies should target populations with more variation in periodontal status and include more powerful statistical analyses such as the general linear model (multiple regression) which could better determine the strength of the relationship between the dependent variable of gingival health and the explanatory variables of plaque index and vitality ratio. ■

*Butler #411. John O. Butler Co, Chicago, Illinois

"Sensodyne (no fluoride), Block Drug Co. Mississauga, Ontario

Ms. Gelskey is an associate professor, section of periodontics, faculty of dentistry, at the University of Manitoba.

Dr. Brex is associated with the faculty of dentistry at the University of Tübingen in Germany.

Dr. Netuschil is associated with the faculty of dentistry at the University of Tübingen in Germany.

Ms. MacDonald is an assistant professor in the school of dental hygiene at the University of Manitoba.

Ms. Brownstone is an associate professor and the director of the school of dental hygiene at the University of Manitoba.

Ms. Stoddart is the chief technologist, section of oral pathology, faculty of dentistry, at the University of Manitoba.

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Reprint requests to: **Ms. S. Gelskey**, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W2.

References

1. Loe, H., Theilade, E. and Jensen, S. Experimental gingivitis in man. *J Periodontol* 36:177-87, 1965.
2. Theilade, E., Wright, W., Borglum Jensen, S. et al. Experimental gingivitis in

man. II. A longitudinal clinical and bacteriological investigation. *J Periodont Res* 1:1-13, 1966.

3. Tagge, D.L., O'Leary, T.J. and El-Kafrawy, A.H. The clinical and histological response of periodontal pockets to root planing and oral hygiene. *J Periodontol* 46:527-33, 1975.

4. Page, R.C. and Schroeder, H.E. Pathogenesis of inflammatory periodontal disease. A summary of current work. *Laboratory Investigation* 33:235-49, 1976.

5. Brex, M., Schlegel, K., Gehr, P. et al. Comparison between histological and clinical parameters during human experimental gingivitis. *J Periodont Res* 22:50-57, 1987.

6. Loe, H. and Holm-Pederson, P. Absence and presence of fluid from normal and inflamed gingivae. *Periodontics* 3:171-7, 1965.

7. Silness, J. and Loe, H. Periodontal disease in pregnancy. II: Correlation between oral hygiene and periodontal conditions. *Acta Odontol Scand* 22:112-35, 1964.

8. Loe, H. The gingival index, the plaque index and the retention index systems. *J Periodontol* 38:610-16, 1967.

9. Listgarten, M., Lindhe, J. and Helldén, L. Effect of tetracycline and/or scaling on human periodontal disease. Clinical, microbiological and histological observations. *J Clin Periodontol* 5:246-71, 1978.

10. Slots, J., Mashimo, P., Levine, M. et al. Periodontal therapy in humans. I. Microbiological and clinical effects of a single course of periodontal scaling and root planing, and of adjunctive tetracycline therapy. *J Periodontol* 50:495-509, 1979.

11. Mousques, I., Listgarten, M. and Phillips, R. Effect of scaling and root planing on the composition of the human subgingival microbial flora. *J Periodont Res* 15:144-51, 1980.

12. Axelsson, P. and Lindhe, J. The significance of maintenance care in the treatment of periodontal disease. *J Clin Periodontol* 8:281-94, 1981.

13. Badersten, A., Nilveus, R. and Egelberg, J. Effect of non-surgical periodontal therapy. III Single versus repeated instrumentation. *J Clin Periodontol* 11:114-24, 1984.

14. Netuschil, L., Reich, E. and Brex, M. Direct measurement of the bactericidal effect of chlorhexidine on human dental plaque. *J Clin Periodontol* 16:484-88, 1989.

15. Brex, M., Netuschil, L., Reichert, B. et al. Efficacy of Listerine, Meridol and chlorhexidine mouth rinses on plaque, gingivitis and plaque bacterial vitality. *J Clin Periodontol* 17:292-9, 1990.

16. Brex, M., Brownstone, E., MacDonald,

ald, L. et al. Efficacy of Listerine, Meridol and chlorhexidine mouth rinses as supplements to regular tooth cleaning measures. *J Clin Periodontol* 1992a (accepted for publication).

17. Brex, M., Forgay, M., MacDonald, L. et al. Efficacy of Plax on plaque, gingivitis and plaque bacteria vitality. *J Dent Res* 1992b (accepted for publication).

18. Loe, H. and Silness, J. Periodontal disease in pregnancy. I. Prevalence and severity. *Acta Odontol Scand* 21:533-51, 1963.

19. Lovdal, A., Arno, A., Schei, O. et al. Combined effect of subgingival scaling and controlled oral hygiene on the incidence of gingivitis. *Acta Odontol Scand* 19:537-55, 1961.

20. Suomi, J.D., Greene, J.C., Vermillion, J.R. et al. The effect of controlled oral hygiene procedures on the progression of periodontal disease in adults; results after two years. *J Periodontol* 40:416-20, 1969.

21. Suomi, J.D., Greene, J.C., Vermillion, J.R. et al. The effect of controlled oral hygiene procedures on the progression of periodontal disease in adults: results after third and final year. *J Periodontol* 42:152-60, 1971.

22. Lightner, L.M., O'Leary, T.J., Drake, R.B. et al. Preventive periodontic treatment procedures: Results over 46 months. *J Periodontol* 42:555-61, 1971.

23. Axelsson, P. and Lindhe, J. Effect of controlled oral hygiene procedures on caries and periodontal disease in adults. *J Clin Periodontol* 5:133-51, 1978.

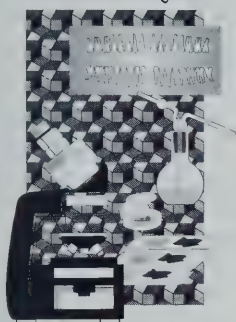
24. Rosenberg, E.S., Grossberg, D.E. and Hammond, B. The effect of scaling, root planing and curettage on cultivable micro flora associated with periodontal disease. *Int J Periodontics Restorative Dent* 9:22-33, 1989.

25. Rönstrom, A., Edwardsson, S. and Attström R. Streptococcus sanguis and streptococcus salivarius in early plaque formation on plastic films. *J Periodont Res* 12:331-39, 1977.

26. Marshall, H.B. Plaque and periodontal disease. *N.Y. J Dent* 41:209-13, 1971.

27. Socransky, S.S., Manganillo, A.D., Propas, D. et al. Bacteriological studies of developing supragingival dental plaque. *J Periodont Res* 12:90-106, 1977.

28. Lindhe, J. and Nyman, S. The effect of plaque control and surgical pocket elimination on the establishment and maintenance of periodontal health. A longitudinal study of periodontal therapy in cases of advanced disease. *J Clin Periodontol* 2:67-79, 1975.



La Minocycline

Paul D'Aoust, B.Sc.

Gaétan Noreau

Céline Rochette, DMD

Julie Zacharie, DMD

René Guy Landry, DMD, Dip. (perio), M.Sc., MRCD(C)

SOMMAIRE

Puisque les maladies parodontales sont des infections d'origine bactérienne, les agents thérapeutiques sont parfois utilisés pour les traiter et les prévenir. Parmi ces agents: la minocycline. Le but de cet article est de faire une mise à jour de la littérature sur les études *in vitro* et *in vivo* se rapportant à cet antibiotique, ainsi que sur ses actions pharmacocinétiques et ses effets secondaires.

Mot clef: minocycline

ABSTRACT

Periodontal diseases are bacterial infections and antimicrobial agents appear to offer great potential in their treatment and prevention. One such chemotherapeutic agent is minocycline. The aim of this paper is to review the literature on this antibiotic concerning *in vitro* and *in vivo* studies, its pharmacokinetics and secondary effects.

Key word: minocycline

Introduction

La minocycline est une tétracycline qui exerce une action antibactérienne dirigée contre certains microorganismes gram-négatifs et gram-positifs. Elle est utilisée dans le domaine médical afin de traiter principalement des infections d'origine pulmonaire, urinaire et cutanée. Son

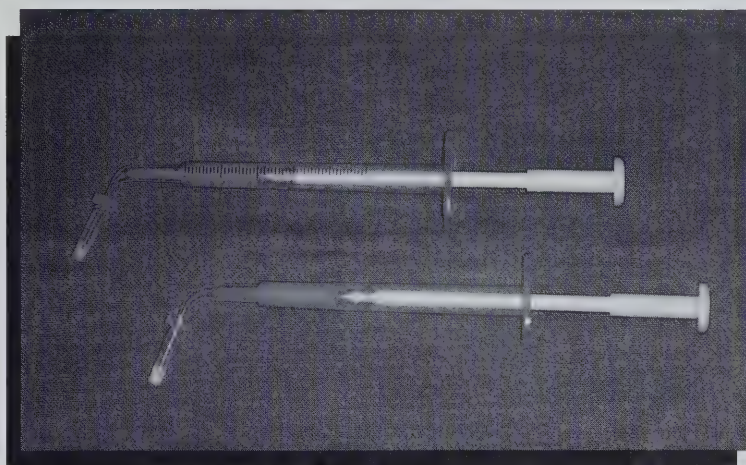


Fig. 1: Seringues pour application locale.

usage le plus reconnu concerne le domaine du traitement de l'acné.

Bien que son utilisation en parodontie soit encore à un stade précoce, des études démontrent que la minocycline est un agent antibactérien efficace dans le traitement des maladies parodontales.¹⁻⁷ La maladie parodontale est une infection d'origine bactérienne⁸⁻¹⁰ caractérisée par une inflammation du tissu gingival, la formation de poches parodontales ainsi que par une perte de tissu de support de la dent. Cette maladie est liée à la présence de la plaque supra et sous-gingivale. La prévention et le traitement initial de cette maladie (soit par détartrage ou par surfaçage radiculaire) visent à éliminer la plaque bactérienne et le tartre responsable de l'infection. De plus, la plaque dentaire étant d'origine bac-

térienne, il devient intéressant de considérer l'antibiothérapie dans l'approche thérapeutique des maladies parodontales. Plusieurs antibiotiques ont fait l'objet d'études jusqu'à maintenant.

Le but de cet article est de faire une revue de la littérature spécifique à l'utilisation de la minocycline en parodontie.

La minocycline est un antibiotique semi-synthétique de quatrième génération, de la famille des tétracyclines. Elle se présente sous forme de comprimés, de cachets, de suspension orale et peut être administrée par voie intraveineuse. Au Japon et dans quelques autres pays de l'Eurasie, elle est aussi disponible en gel, présentée dans une seringue pour application locale (**Fig. 1**). Son poids moléculaire est de 493.94, sa formule empiri-

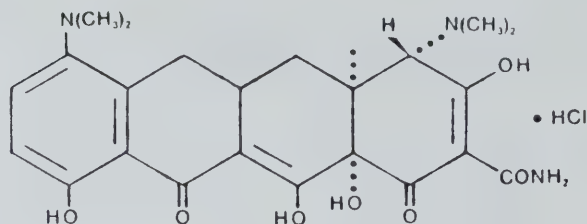


Fig. 2: Structure de la minocycline.



Fig. 3: Coloration intrinsèque due à la minocycline.

que est $C_{23}H_{27}N_3O_7HCl$ et sa nomenclature chimique est le 7 diméthylamino-6-deoxytétracycline hydrochloride (Fig. 2). Elle est surtout connue sous le nom commercial de Minocin (Lederle Laboratories, Cyanamid).

Mécanismes d'action

La minocycline est principalement bactériostatique et agit en inhibant la synthèse des protéines au niveau des ribosomes bactériens. Les ribosomes sont constitués de deux sous-unités 30S et 50S qui, ensemble, forment le complexe ribosomique 70S actif. En se liant à la sous-unité 30S, la minocycline rend impossible la formation du

complexe ribosomique et prévient la synthèse des protéines. En plus de son activité antimicrobienne, il a été suggéré que la minocycline a un effet anticollagénolytique.^{11,12} Les enzymes collagénolytiques dépendent des cations calcium et zinc pour maintenir leur conformation structurale et leur activité hydrolytique.^{13,14} Les tétracyclines, ayant des propriétés de chélation, forment des complexes avec des cations et pourraient ainsi être responsables de l'activité réduite des collagénases, tel que rapporté par Golub et coll. (1983).¹¹

Pharmacocinétique

La minocycline est rapidement

et complètement absorbée à la suite de son administration orale, ayant une demi-vie d'absorption sérique (temps requis pour que la demie de la dose orale se retrouve dans le sang) de moins d'une heure.¹⁵⁻¹⁷ Le niveau maximal d'antibiotique dans le sérum est atteint deux à trois heures après la prise orale du médicament, et sa demi-vie est de 16 heures pour la doxycycline.¹⁵ L'absorption de la minocycline peut être altérée par les antiacides contenant de l'aluminium, du calcium ou du magnésium.¹⁸ De plus, le fer diminue l'absorption de l'antibiotique.¹⁹ Ainsi, les suppléments de fer et les «antiacides» devraient être pris après un délai de trois heures à la suite de l'ingestion de la minocycline. Il est cependant possible d'atteindre des niveaux thérapeutiques sans restrictions diététiques sévères telles que celles nécessaires pour les autres tétracyclines.

La quantité de minocycline qui atteint les tissus est bonne, puisque sa concentration dans les tissus est habituellement plus élevée que dans le sérum.¹⁵ Cette bonne distribution est due à l'excellente liposolubilité de la minocycline.²⁰⁻²² La minocycline est lentement excrétée dans l'urine et les fèces, principalement sous forme de métabolites.²³ Il a été rapporté que l'élimination rénale de la minocycline est lente à la suite de son administration, et que l'antibiotique persiste dans le corps pour plusieurs jours.¹⁵

Minocycline in vitro

Plusieurs études^{17,24-26} ont révélé *in vitro* l'évidence de l'efficacité de la minocycline contre un grand nombre de bactéries anaérobiques.

Dans une étude de Sutter et coll. (1976)²⁴ où 492 bactéries anaérobiques ont été testées, on observait une tendance vers la résistance aux tétracyclines. Cependant, la minocycline s'est avérée plus efficace que la tétracycline elle-même. Il faut remarquer ici que l'étude portait sur un grand nombre de bactéries dont la présence dans la cavité buccale n'a pu être établie.

Baker et coll. (1985)²⁵ mirent en évidence la substantivité intéressante

sante et l'activité anticollagénolytique de la minocycline. Steigbigel et coll. (1968)¹⁷ ont aussi tenté de démontrer l'efficacité *in vitro* de sept différentes tétracyclines dirigées contre 421 souches de bactéries pathogènes communes. Encore ici, si l'on tient compte de toutes les espèces présentes, la minocycline s'avère la plus active chez 67 p. cent des souches.

Les études ayant eu pour sujet les bactéries de la plaque dentaire sont cependant celles qui nous intéressent davantage. O'Connor et coll. (1990)²⁶ ont trouvé une CMI (concentration minimale inhibitrice) pour la minocycline allant de 0,03 à 32 mg/mL avec une valeur médiane de 1,0 mg/mL capable d'inhiber 85 p. cent des espèces bactériennes buccales et une CMB (concentration minimale bactéricide) se situant entre 0,5 et 32 mg/mL. À une concentration de 1,0 mg/mL et plus, l'antibiothérapie dirigée contre *S. sanguis*, *E. corrodens*, *W. recta*, *A. actinomycetemcomitans* et *A. viscosus* s'est avérée très efficace. Certaines espèces du groupe bactéroïdes à colonie pigmentée noire ont démontré des CMI supérieures au niveau atteignable dans le liquide crévulaire (environ 16 mg/mL). L'inhibition de ces espèces bactériennes pourrait être impossible chez les patients absorbant la minocycline par voie systémique, la dose étant insuffisante. En fin, une exposition à différentes concentrations de minocycline pendant six heures a eu peu d'effets contre *V. parvulus* ou *F. nucleatum*. Ces résultats corroborent ceux de Baker et coll. (1985)²⁵ qui rapportent une CMI de 3,3 mg/mL pouvant inhiber 90 p. cent des souches bactériennes orales anaérobiques testées.

Cependant, ces concentrations peuvent varier, dépendant des conditions dans lesquelles sont administrés les antibiotiques. Il a été démontré²⁶ que le magnésium, à une certaine concentration, augmentait la CMB de la minocycline pour un grand nombre de bactéries de la plaque. En présence de 20 mmg/mL de magnésium, la CMB était d'au moins huit fois supérieure qu'en son absence.

L'effet antibactérien de la minocycline n'est pas le seul avantage

observé. On note de plus un effet thérapeutique intéressant pour les traitements postchirurgicaux. Somerman et coll. (1988)²⁷ ont étudié les effets *in vitro* de la minocycline sur l'attache conjonctive et sur la prolifération des fibroblastes. Une condition initiale requise pour la régénération parodontale (formation d'os, ciment et attache de tissu conjonctif) est l'attache et la prolifération subséquente des fibroblastes au site de guérison. Les résultats de cette étude mettent bien en évidence que les fibroblastes exposés à la minocycline possèdent un potentiel de ré-attache conjonctive et de prolifération beaucoup plus élevé que le groupe contrôle. Les tétracyclines agissent directement pour stimuler l'attache conjonctive.

Les tétracyclines, étant des agents chélateurs, sont capables de déminéraliser la surface de la racine. Cette déminéralisation amène l'exposition de fibres de collagène, ce qui stimule la migration des cellules du tissu conjonctif.²⁸

Ces études *in vitro* ont démontré que la minocycline à des concentrations atteignables, soit par voie systémique ou topique, est capable d'éliminer la plupart des bactéries testées, associées aux parodontopathies. Cependant, en raison des doses élevées requises pour éliminer certaines espèces, notamment *W. recta* et des souches de bactéroïdes à colonie pigmentée noire, l'administration topique semble nécessaire. L'antibiotique est appliqué directement dans les poches parodontales pour atteindre la concentration thérapeutique. Seul un tel moyen d'application peut maintenir une concentration adéquate pendant la période prolongée requise pour inhiber ou détruire les bactéries de la poche parodontale.²⁶

Minocycline in vivo dans le traitement des parodontopathies

Plusieurs études cliniques ont permis de déterminer l'efficacité de la minocycline en fonction de divers paramètres cliniques. La minocycline a été largement étudiée²⁹⁻³² en dermatologie clinique pour le traitement de l'acné. Aussi,

la minocycline est efficace contre les microorganismes buccaux² et elle a la capacité d'augmenter la santé gingivale chez des individus atteints de maladies parodontales.¹ Il a été démontré que la santé gingivale peut être maintenue, pour au moins 49 jours après usage de la minocycline à une posologie de 200 mg quotidiennement pendant sept jours et que le décompte des bactéries demeurerait réduit pour un minimum de 70 jours.²

Les tétracyclines se retrouvent dans le liquide crévulaire,³³⁻³⁵ ainsi que dans la salive et les larmes.²² D'autre part, on a fait la preuve que la minocycline se trouve en concentrations plus élevées dans la salive que les autres tétracyclines.²² Ciancio et coll. (1980)¹ ont évalué l'efficacité de deux doses différentes de minocycline; soit 200 mg par jour et 150 mg par jour pour une période de huit jours. Le niveau d'antibiotique dans le liquide crévulaire a atteint la concentration bactériostatique dès la première journée de la prise du médicament, et ceci pour les deux doses évaluées. De plus, cette concentration dans le liquide crévulaire était cinq fois plus élevée que celle dans le sérum.

La minocycline présente en si grande concentration dans le liquide crévulaire favorise l'élimination des microorganismes sous et supra-gingivaux.^{2,4,36} L'efficacité de la minocycline est telle que le décompte de cellules microbiennes sous-gingivales diminue d'un facteur de 25 avec le traitement à la minocycline contre un facteur de 4 avec le placebo.¹ Par contre, la minocycline semble être inactive lorsque dirigée contre *Actinobacillus actinomycetemcomitans*.^{7,36,37}

En plus de l'action antimicrobienne, il faut considérer l'effet anticollagénique de la minocycline. L'activité collagénolytique dans le liquide crévulaire des patients affligés d'une parodontite de l'adulte est plus élevée que chez les individus sains. Les collagénases sont détectées dans les neutrophiles, dans la poche parodontale et dans les pathogènes dont *P. gingivalis*. Golub et coll. (1985)¹² ont démontré que l'acti-

vité des enzymes collagénolytiques était réduite de 70 p. cent en une semaine à la suite du traitement avec l'antibiotique, et que cette réduction est demeurée plus longtemps avec la minocycline qu'avec la tétracycline.

En ce qui concerne les paramètres cliniques, la minocycline réduit l'indice gingival et la quantité de liquide crévicaire.^{1,2,4,12} De plus elle diminue la profondeur des poches parodontales,^{5,6,33,12} l'indice de saignement^{4,6} et favorise le niveau d'attache.³⁻⁵

Des études récentes³⁻⁶ ont tenté d'évaluer l'efficacité de la minocycline appliquée localement, dans les poches parodontales, sous forme d'onguent ou sous forme de fils imprégnés de l'antibiotique. Les résultats démontrent des conditions cliniques nettement améliorées à la suite du traitement local à la minocycline. Des investigateurs canadiens des facultés dentaires d'Edmonton, de Dalhousie et de Laval complètent présentement l'évaluation de cette application en parodontie.

Effets secondaires

Une décoloration dentaire permanente est associée à l'administration de la minocycline³⁸ durant la dernière moitié de la grossesse et aux enfants de moins de 13 ans. En plus, la minocycline ne devrait pas être administrée aux femmes pendant l'allaitement car l'antibiotique est excrété dans le lait.²³ L'administration à très long terme donne à la muqueuse une teinte bleutée engendrée par la transparence de l'os sous-jacent coloré bleu-vert en raison de la déposition graduelle de minocycline (Fig. 3).

On recommande d'éviter l'administration de la minocycline en concomitance avec la pénicilline puisque des agents bactériostatiques peuvent inhiber l'action bactéricide de cette dernière. D'autre part, l'usage concomitant de contraceptifs oraux réduit l'efficacité anovulante et augmente l'incidence de pertes sanguines intermenstruelles. Les doses orales habituelles de minocycline peuvent provoquer des accumulations systémiques excessives lorsque la fonction rénale est insuffisante et

induire conséquemment une hépatotoxicité. Les patients qui prennent de la minocycline devraient être avisés d'éviter de s'exposer directement au soleil ou aux rayons ultraviolets, en raison du risque de photosensibilité qui se manifeste comme un coup de soleil.²³

Les effets les plus fréquents que pourraient ressentir les patients sont les nausées (8,9 p. cent), les céphalées (< 1,0 p. cent), les étourdissements, ainsi que les vertiges et les malaises gastro-intestinaux (1,3 p. cent). Et plus rarement, on a rapporté une élévation de la pression intracrânienne, de l'anorexie, de la glossite, du prurit anal, de la dysphagie et des lésions inflammatoires avec prolifération candidosique dans la région anovulvaire.²³

Conclusion

La minocycline est une tétracycline exerçant une action antibactérienne contre certains microorganismes gram-négatifs et gram-positifs.

La minocycline est au moins aussi effective que les autres tétracyclines et a l'avantage de n'être prise que deux fois par jour et d'être plus facilement absorbée.

Les effets secondaires sont peu nombreux. Depuis quelques années, il est déjà possible en certains pays de retrouver la minocycline en gel pour usage parodontal dans la crevasse gingivale.

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Paul D'Aoust et Gaétan Noreau sont étudiants à la Faculté de médecine dentaire, Université Laval, Ste-Foy

D^r Céline Rochette pratique en bureau privé à Québec.

D^r Julie Zacharie pratique en bureau privé à La Malbaie.

D^r René Guy Landry est professeur agrégé, département de réhabilitation, Faculté de médecine dentaire, Université Laval, Ste-Foy.

Demandes de tirés à part: D^r René Guy Landry, Faculté de médecine dentaire, Université Laval, Ste-Foy (Québec) Canada, G1K 7P4

Bibliographie

1. Ciancio, S.G., Mather, M.L. et McMullen, J.A. An evaluation of minocycline in patients with periodontal disease. *J Periodontol* 51(9):530-534, 1980
2. Ciancio, S.G., Slots, J., Reynolds, H.S. et al. The effect of short-term administration of minocycline-HCl on gingival inflammation and subgingival micro flora. *J Periodontol* 53(9):557-561, 1982.
3. Nakagawa, T., Yamada, S., Oosuka, Y. et al. Clinical and microbiological study of local minocycline delivery (Perioline) following scaling and root planning in recurrent periodontal pockets. *Bull Tokyo Dent Coll* 32(2):63-70, 1991.
4. Landry, R.G., Rochette, C., Zacharie, J. et al. Effectiveness of minocycline ointment in adult periodontitis pockets: preliminary results. *J Dent Res* 71(special issue):245, 1992.
5. Braswell, L., Offenbacher, S., Fritz, M. et al. Local delivery of Minocin to periodontal lesions in a slow-release polymer. *J Dent Res* 71(special issue):245, 1992.
6. Jones, A., Wood, R., Newbold, D. et al. Clinical effects of subgingival minocycline in periodontitis. *J Dent Res* 71(special issue):245, 1992.
7. Muller, H.P., Lange, D.E. et Muller, R.F. Failure of adjunctive minocycline-HCl to eliminate oral Actinobacillus actinomycetemcomitans. *J Dent Res* 71(special issue):245, 1992.
8. Newman, M.G. et Socransky, S.S. Predominant cultivable microbiota in periodontitis. *J Periodont Res* 12:120, 1977.
9. Slots, J. Subgingival micro flora in periodontal disease. *J Clin Periodontol* 6:351, 1979.
10. Loesche, W.J. The bacterial etiology of dental decay and periodontal disease: the specific plaque hypothesis. *Clin Dent* 2:1, 1982.
11. Golub, L.M., Lee, H.M., Lehrer, G. et al. Minocycline reduces gingival collagenolytic activity during diabetes: preliminary observations and a proposed new mechanism of action. *J Periodont Res* 18: 516-526, 1983.
12. Golub, L.M., Wolff, M., Lee, H.M. et al. Further evidence that tetracyclines inhibit collagenase activity in human crevicular fluid and from other mammalian sources. *J Periodont Res* 20:12-23, 1985.
13. Berman, M.B. *Collagenase and corneal ulceration. Collagenase in normal and pathological connective tissues.* New York, John Wiley and Sons, Ltd. 141-174, 1980.
14. Macartney, H.W. et Tschesche, H. The metal ion requirement for activation of latent collagenase from human polymorphonuclear leukocytes. *Hope-Seyler's Zeit Phys Chem* 362:1523-1531, 1981.

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15. Macdonald, H., Kelly, R.G., Allen, E.S. et al. Pharmacokinetic studies on minocycline in man. *Clin Pharmacol Ther* 14:852-861, 1973.
16. Green, R.G., Brown, J.R. et al. Estimation of the degree of binding of tetracyclines in human plasma. *J Pharm Pharmacol* 28:514-515, 1976.
17. Steigbigel, N.H., Reed, C.W. et al. Susceptibility of common pathogenic bacteria to seven tetracycline antibiotics in vitro. *Am J Med Sci* 225:179-195, 1968.
18. Barringer, W.C., Shultz, W., Sieger, G.M. et al. Minocycline hydrochloride and its relationship to the pharmaceutical properties of other tetracycline antibiotics. *Am J Pharm* 146:179-191, 1974.
19. Leyden, J.J. Absorption of minocycline hydrochloride and tetracycline hydrochloride. Effect of food, milk, and iron. *J Am Acad Dermatol* 12:308-312, 1985.
20. Blackwood, R.K. et al. English, A.R. Structure activity relationships in the tetracycline series. *Adv Appl Microbiol* 13:237-266, 1970.
21. Colaizzi, J.D. and Klink, P.R. pH-partition behavior of tetracycline. *J Pharm Sci* 58:1184-1189, 1969.
22. Hoeprich, P.D. and Warshawer, D.M. Entry of four tetracyclines into saliva and tears. *Antimicrob Agents Chemother* 5:330, 1974.
23. Medical editorial services, Lederle

- Laboratories. Minocin minocycline hydrochloride. 1987.
24. Sutter, V.L. et al. Finegold, S.M. Susceptibility of anaerobic bacteria to 23 antimicrobial agents. *Antimicrob Agents Chemother* 10(4):736-752, 1976.
25. Baker, P.J., Evans, R.T., Slots, J. et al. Susceptibility of human oral anaerobic bacteria to antibiotics suitable for topical use. *J Clin Periodontol* 12:201-208, 1985.
26. O'Connor, B.C., Newman, H.N. et al. Wilson, M. Susceptibility and resistance of plaque bacteria to minocycline. *J Periodontol* 61(4):228-233, 1990.
27. Somerman, M.J., Foster, R.A., Vorsteg, G. et al. Effects of minocycline on fibroblast attachment and spreading. *J Periodont Res* 23:154-159, 1988.
28. Terranova, V.P., Franzetti, L.C., Hick, S., et al. A biochemical approach to periodontal regeneration: tetracycline treatment of dentin promotes fibroblast adhesion and growth. *J Periodont Res* 21:330, 1986.
29. Hersle, K. et al. Gisslen, H. Minocycline in acne vulgaris: a double-blind study. *Curr Ther Res* 19:339-342, 1976.
30. Cullen, S.I. et al. Cohan, R.G. Minocycline therapy in acne vulgaris. *Cutis* 17:1208-1214, 1976.
31. Hubbell, C.G., Hobbs, E.R., Rist, T. et al. Efficacy of minocycline compared with tetracycline in treatment of acne vulgaris. *Arch Dermatol* 118:989-992,

- 1982.
32. Leyden, J.J., McGinley, K.J. et al. Kligman, A.M. Tetracycline and minocycline treatment. Effects on skin-surface lipids and Propionibacterium acnes. *Arch Dermatol* 118:19-22, 1982.
33. Ponitz, D.P., Gershkoff, A. et al. Wells, H. Passage of orally administered tetracycline into the gingival crevice around natural teeth and around protruding subperiosteal implant abutments in man. *Dent Clin North Am* 14:125, 1970.
34. Bader, H.I. et al. Goldhaber, P. The passage of intravenously administered tetracycline into the gingival sulcus of dogs. *J Oral Ther* 2:180, 1965.
35. Ciancio, S.G., Singh, S., Genco, R. et al. Analysis of tetracycline in human gingival fluid: Methodology and results. *J Dent Res* 55:411, 1976.
36. Goené, R.J., Winkel, E.G., Abbas, F. et al. Microbiology in diagnosis and treatment of severe periodontitis. A report of four cases. *J Periodontol* 61(1):61-64, 1990.
37. Landry, R.G., D'Aoust, P., Noreau, G. et al. Changes in subgingival microflora following local delivery of minocycline. *J Dent Res* 72: 453, 1993.
38. Cale, A.E., Freedman, P.D. et al. Lumerman, H. Pigmentation of the jawbones and teeth secondary to minocycline hydrochloride therapy. *J Periodontol* 59:112-114, 1988.

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The Annual Meeting of the Board of Governors of the Canadian Dental Association will be held September 10-11, 1993 (Friday-Saturday), at the Westin Hotel, Ottawa, commencing at 9:00 a.m. on September 10.

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Toutes les informations devront être reçues au plus tard le 13 août 1993.

CANADIAN DENTAL SERVICE PLANS INC. MANAGEMENT COMMITTEE POSITION

The Board of Directors of CDSPI has decided to eliminate the one year apprenticeship period for the Management Committee position which will become vacant on January 1, 1995. Consideration of applications for the position is therefore being deferred until the spring of 1994.

Individuals who have submitted applications will be contacted when the selection process resumes to determine whether they wish their applications to be considered.

CDSPI thanks those who have submitted applications for their interest. Inquires about CDSPI or the Management Committee position may be sent to:

The Management Committee Selection Committee
c/o CDSPI
Suite 710, 100 Consilium Place
Scarborough, Ontario
M1H 3G8

All responses will be treated as confidential.

CANADIAN DENTAL SERVICE PLANS INC. POSTE DE MEMBRE DU COMITÉ DE DIRECTION

Le conseil d'administration du CDSPI a décidé d'éliminer la période d'apprentissage d'un an pour le poste de membre du Comité de direction qui se libérera le 1^{er} janvier 1995. L'étude des candidatures à ce poste est donc reportée au printemps 1994.

Les personnes ayant soumis leur candidature seront contactées lorsque le processus de sélection sera remis en marche, pour savoir si elles sont toujours candidates.

Le CDSPI tient à remercier les personnes qui ont posé leur candidature. Toutes questions sur le CDSPI ou le Comité de direction doivent être envoyées à l'adresse suivante:

CDSPI
Bureau 710, 100 Consilium Place
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Toutes les demandes seront strictement confidentielles.



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Applicants shall send a letter of intent along with a resume and list with the names of three persons who in turn will send their letters of recommendation directly the Assistant Dean.

Deadline for accepting all information: Friday, August 13, 1993.

René Guy Landry,
Assistant dean (Academic Affairs)
Faculté de médecine dentaire
Université Laval,
Québec, G1K 7P4

For further information :
Phone : (418) 656-7201 Fax : (418) 656-2720



Médecine dentaire

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La Faculté de médecine dentaire tient présentement un concours pour combler un poste de professeur plein-temps. Ce professeur se verra attribuer les tâches habituelles du professeur d'université et plus particulièrement l'enseignement aux 1^{er} et 2^e cycles, l'encadrement de l'enseignement de la dentisterie pédiatrique, le développement de projets de recherche clinique, des tâches de participation, etc.

Les postulants doivent fournir la preuve de leur formation universitaire (DMD ou DDS), avoir préféablement de l'expérience en enseignement universitaire, détenir un permis de pratique de l'Ordre des dentistes du Québec, détenir ou s'engager à obtenir un certificat de dentiste spécialiste pour enfants et une maîtrise avec recherche, et finalement maîtriser la langue française. L'Université Laval applique un programme d'accès à l'égalité. En accord avec les exigences du Ministère de l'Immigration du Canada, cette offre est destinée en priorité aux citoyennes et citoyens canadiens et aux immigrantes et immigrants reçus.

Il faut poser sa candidature au moyen d'une lettre d'intention accompagnée d'un curriculum vitae, et il faut fournir une liste de trois personnes qui achemineront directement leur lettre de recommandation du candidat à l'adresse ci-dessous.

Toutes les informations devront être reçues avant le vendredi, 13 août 1993.

René Guy Landry,
Vice-doyen aux études de 1^{er} cycle
Faculté de médecine dentaire
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The position is available August 1, 1993; however the search will remain open until the position is filled by a qualified candidate. Salary and academic rank commensurate with background and experience. Letter of interest and CV should be sent to: **Dr. Mel L. Kantor, UMDNJ-New Jersey Dental School (JDE), 110 Bergen Street, Room C-827, Newark, New Jersey 07103-2400.** UMDNJ, New Jersey's university of the health sciences, is an Affirmative Action/Equal Employment Opportunity Employer, m/f/h/v, and a member of the University Health System of New Jersey.



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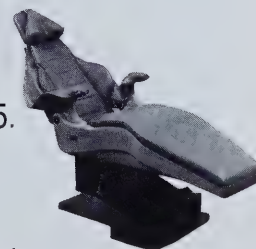
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Advertisers' Index

ADA	567
Ash Temple	IFC
Bisco Dental	IBC
Caulk Canada	OBC
CDA DIS	605
CDA Leasing	603
CDAnet	623
CDA RSP	587
CDSPI	588
Colgate	564
Innovadent	598
Mydea	587
Premier Dental	570, 577
Procter & Gamble	596, 597
Staedtler-Mars	610
University of Toronto	572
Warner Lambert	568

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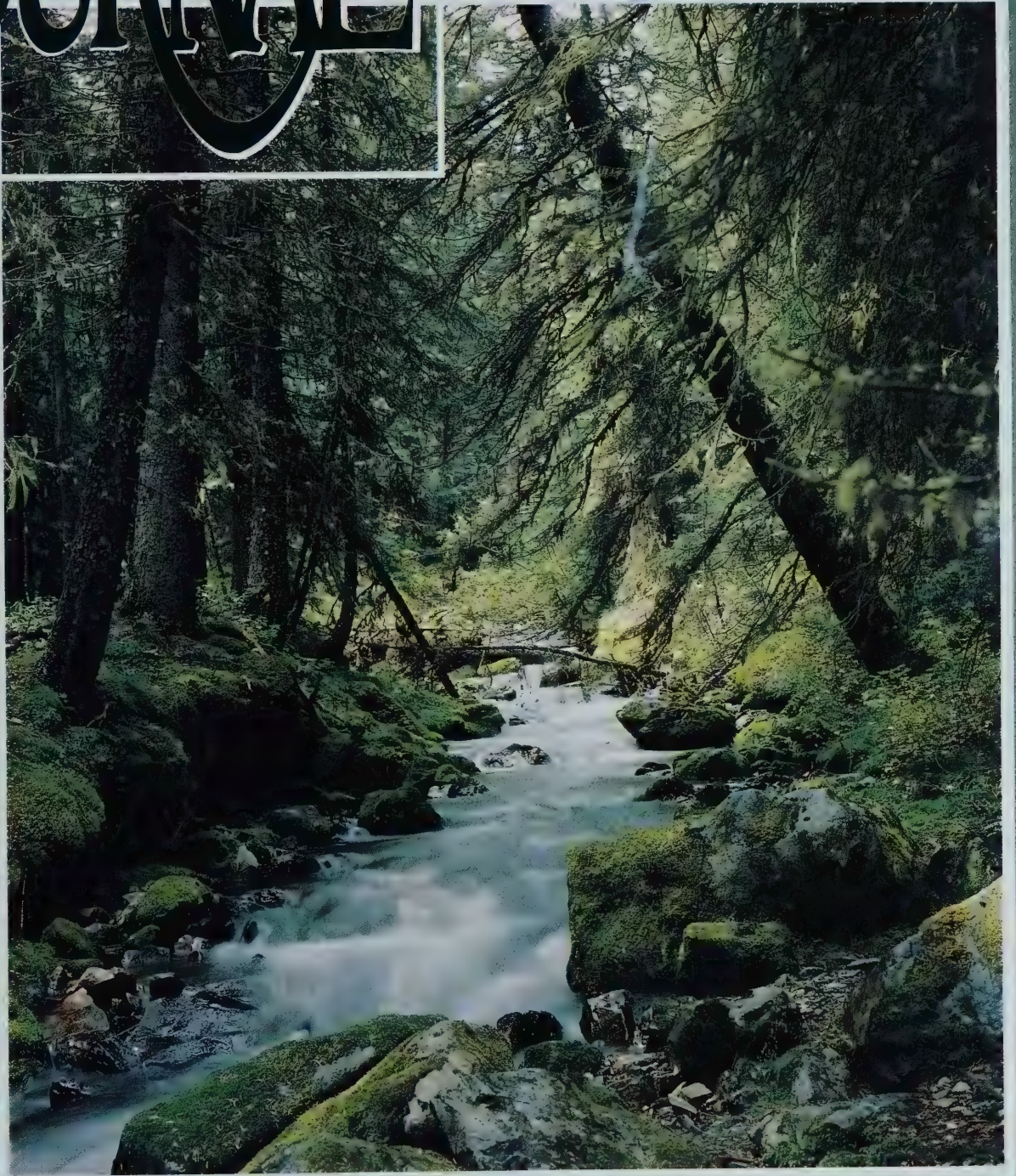
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Vol. 59 No. 8
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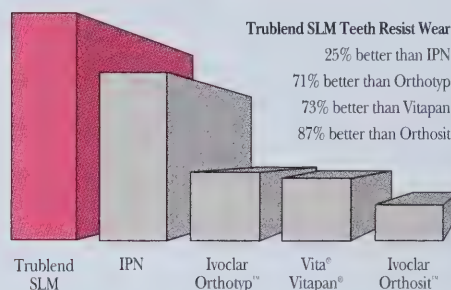
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W.H. Douglas et al., Journal of Dental Research Special Issue, No. 425 (July 1992).

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Vol. 59 No. 8

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The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

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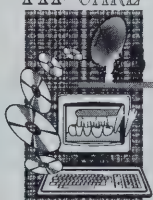
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August/Août 1993
Vol. 59, No. 8

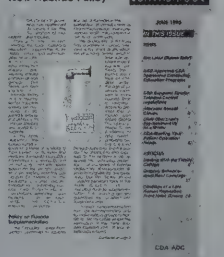
SCIENTIFIC



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CDA Members, look for your next
Communiqué in the September
issue of the Journal.

Scientific

663

Access and Isolation Problem Solving In Endodontics: Anterior Teeth

William H. Liebenberg, B.Sc., BDS (Rand)

673

Prosol-Chlorhexidine Irrigation Reduces the Inci- dence of Bacteremia During Ultrasonic Scaling With the Cavi-Med: A Pilot Investigation

Craig Allison, DDS

Andrew E. Simor, MD, FRCP(C)

David Mock, DDS, PhD, FRCD(C) et al.

686

Pathologies Buccales d'Une Population Agricole Préhistorique de Nord-Est Américain

Gérard Gagné, PhD

Hi-Tech, Hi-Care

701

Computerized Occlusal Analysis

William L. Maness, AB, DDS, MS

Departments

638

Announcements

641

Editorial

643

President's Column

644

Letters to the Editor

647

Book Reviews

649

Library

650

News Update

657

Practice Management
& Success

659

CDSPI Reports

683

CDA Dental Meeting

693

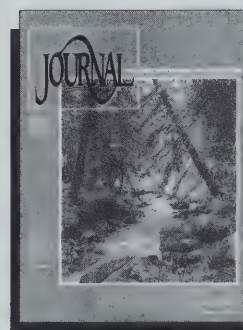
It's My Opinion

697

CDA Access Ads

700

Advertisers' Index



Cover: August afternoon,
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Wilbur Tripp. See story on
page 653)

JOURNAL

August/
Août
1993
Vol. 59
No. 8

637

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

May 12-14, 1994
Newfoundland Dental Association Annual Convention
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October 2-8, 1994
Joint CDA/FDI Annual Dental Meeting
 Vancouver, BC
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September/Septembre 1993

September 3-6: 4th World Congress on Preventive Dentistry, under the auspices of the World Health Organization and the International Association of Dental Research, is being held in Sweden. For more information, contact: WCPD, Faculty of Odontology, University of Umeå, S-901 87 Umeå, Sweden.

September 21-23: Syrian Dental Association 4th Scientific Congress in Damascus, Syria. For details, write: Dr. Rashid Jbara, President, Syrian Dental Association, Jisr Al Abiad, Str, Egypt No. 52 PO Box (11104), Damascus, Syria.

September 29-October 2: 79th Annual American Academy of Periodontology Meeting at the Hyatt Regency Chicago, in Chicago, Illinois. For registration information contact the AAP's Dept. of Meetings and Membership Services at (312) 573-3210.

October/Octobre 1993

October 1-2: 12ème Symposium International de Céramique in Paris, France. The 12th Symposium is being sponsored by Quintessence Publishing (Germany, U.S.A.) and Groupe CdP (France). For information and registration, contact: Groupe CdP, 77 rue de Richelieu, 75002 Paris.

October 1-3: Canadian Association of Dental Consultants Annual Workshop at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, PO Box 2200, Halifax, Nova Scotia B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write CDA at 1815 Alta Vista Dr., Ottawa, Ontario K1G 3Y6.

October 22-23: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ontario. For details, contact: Dr. Jeff Berger, Tel: (519) 258-2632, or fax: (519) 258-2637.

October 29-30: The Canadian Academy of Restorative Dentistry and Prosthodontics at the Halifax Sheraton Hotel in Halifax, Nova Scotia. For information or registration contact: Dr. Michael Roda, 1545 Birmingham St., Halifax, N.S. B3J 2J6. Tel: (902) 422-5957, fax: (902) 492-4426.

November/Novembre 1993

November 2-4: American Academy of Gold Foil Operators in Portland, Oregon. For details, contact: Secretary-Treasurer Dr. Ronald K. Harris, 17922 Tallgrass Court, Noblesville, Indiana 46060 or call: (317) 867-0414.

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, in San Francisco, Cal. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

January/Janvier 1994

January 7-9: Academy of Dentistry International, in collaboration with the Vietnamese Odonto-Stomatological Association will host the 1st International Dental Congress and Expodent 1994 in Ho Chi Minh City, Vietnam. For details, contact: Pac-West (S) DTE Ltd. 1 Selegie Road, 04-05 Paradiz Centre, Singapore 0718, Republic of Singapore.

February/Février 1994

February 3-5: 2nd Catalan Congress on Odontostomatology/Dentalmat 94 at the Palacio de Congresos de Barcelona in Spain. For details, contact: The Official Association of Odontologist and Stomatologist of Catalina, Central Office, Via Laietana, 30, 4°F, 08003, Barcelona, Spain.

February 16-20: Jamaica Dental Association 30th National Dental Convention at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

June/Juin 1994

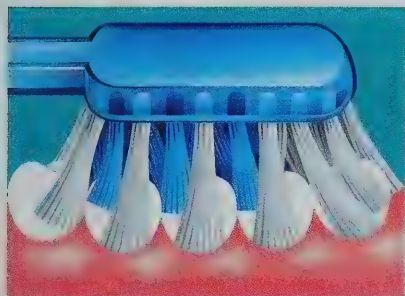
June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046. La Habana, Cuba.

JOURNAL

August/
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Vol. 59
No. 8

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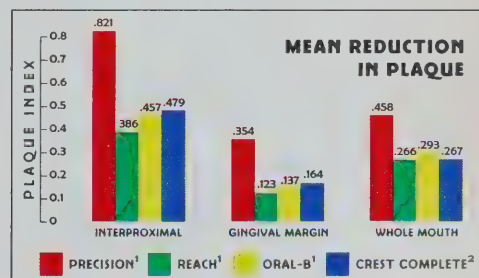
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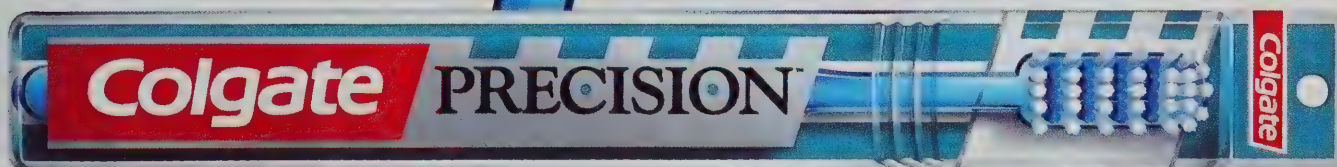
The short inner bristles gently scrub tooth surfaces, while long inner bristles reach deep to clean between teeth.

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Superior plaque removal and a pleasure to use – two good reasons to brush with Colgate Precision.



1. Sharma, N. et al., BioSci Research, Canada, Journal of Clinical Dentistry, Vol. III, Suppl C: C13 - C20, 1992. 2. Balanyh T.E. et al., Journal of Clinical Dentistry, Vol. IV, Suppl D: D8 - D12, 1993. (Plaque Index values for Precision: Interproximal = 0.763; Gingival Margin = 0.380; Whole Mouth = 0.412).



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*Leinfelder, K.:
Clinical evaluation of Charisma -
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The Kulzer Communicator, Spezial Update Issue,
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EDITORIAL

I Offer the Public the Fruit of My Pains



Dr. P. Ralph Crawford,
Editor

In today's world, where the accumulation of wealth has become so important, it's refreshing to discover that there are still people who put their fellow man before the almighty dollar.

I was reminded of this recently while reading an article that ran in the May 13 edition of the *Toronto Globe and Mail*. It was a surprisingly short story, running a mere 18 lines, but what it said was terrifically important.

The story highlighted the work of Dr. Manuel Elkin Patarroyo, a Columbian scientist who has developed the first vaccine against malaria. Known as SPf66, the vaccine could be a major weapon against the mosquito-borne disease that kills more than three million people a year and affects more than 300 million.

Even more remarkable, however, is the fact that Dr. Patarroyo has agreed to transfer all legal rights for the vaccine to the World Health Organization. In spurning multimillion-dollar deals from drug firms, he said, "On behalf of the Colombian people, we would very much like to offer this vaccine to the world."

Dr. Patarroyo's generosity is reminiscent of a similar event that

occurred more than 250 years ago. In the preface to the second edition of *The Surgeon Dentist or Treatise on the Teeth*, Pierre Fauchard stated, "I offer to the public the fruit of my pains and my vigils, hoping that it may prove of some use to those who intend to exercise the profession of the surgeon dentist and of great advantage to persons who wish to preserve their teeth in a good state."

While Dr. Patarroyo's 1993 gesture was only deemed good enough to rate a short story in the *Globe and Mail*, Fauchard's stand set the 18th century scientific community on end. His confreres in the healing arts had long since forsaken the traditions of their ancient predecessors, the Greek Asklepiadi or priest-doctors, who held that all formulae and methods of treatment were held in common trust for the welfare of the sick and suffering. In effect, more than one 18th-century healer was willing to withhold special knowledge if it meant personal gain. Pierre Fauchard's singular action of freely sharing his genius changed the face of dentistry forever, turning what had been a trade into a true profession, and enshrining his name in history as the Father of Dentistry.

Since Fauchard's day, the dental profession has witnessed a number of examples of the moral tug-of-war between the rights of patients and the right of the individual to sell his or her knowledge to the highest bidder. Some of these stories had happy endings, others did not. For example...

Dr. Horace Wells, who discovered general anesthesia in 1844, wanted to make his invention "as free as air." Unfortunately, others close to him wanted not only profit, but also part of the glory. In the end, Wells, penniless and friendless, took his own life.

Dr. Sanford Barnum refused to either patent or profit from his invention of rubber dam. Instead, in 1864 he gave it freely to every dentist who desired a better method of restorative treatment.

Dr. William M. Taggart developed the casting machine in 1907.

At the outset, he had no great thought of pecuniary advantage. But when he saw the entrepreneurs around him jostling for position and potential profit, he felt that he had to defend himself. In one of the saddest cases of genius and greed gone awry, Dr. Taggart's last years were embittered by litigation. He eventually died in poverty. Then there's the story of Dr. G.V. Black and the commercialization of silver amalgam. I first heard it over 30 years ago from Dr. George Brass, a lecturer in operative dentistry at the University of Manitoba. Dr. Brass recounted how Dr. Black, in 1895, after years of experimentation, developed a near perfect dental amalgam. Calling together the country's leading metallurgical companies, he proceeded to simultaneously disclose his formula, but with the admonition that, as they all knew how to manufacture the product, competition was eliminated. The marketplace eventually determined the price and the public ultimately benefitted. Dr. Black never made a nickel.

The leap from the Greek priest-doctors to Pierre Fauchard to Dr. Patarroyo spans thousands of years, but it seems that the stories of generosity versus avarice are unchanging. Perhaps that's why CDA's *Code of Ethics* is there to remind all of us of our responsibilities—particularly in relation to patients and copyrights:

"Dentists have the obligation of making the results of their investigative efforts available to all when they are useful in safeguarding or promoting the health and well-being of the public.

"Patents and copyrights may be secured by a dentist provided that they and the remuneration derived from them are not used to restrict research, practice, or the benefits of the patented or copyrighted material.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

JOURNAL

August/
Août
1993
Vol. 59
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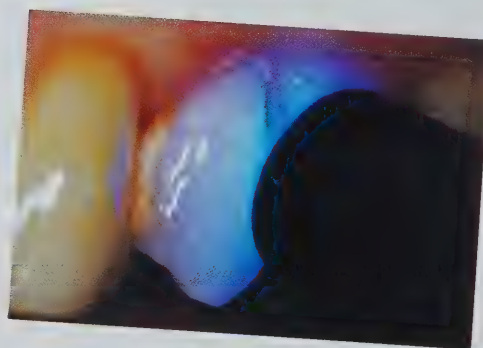
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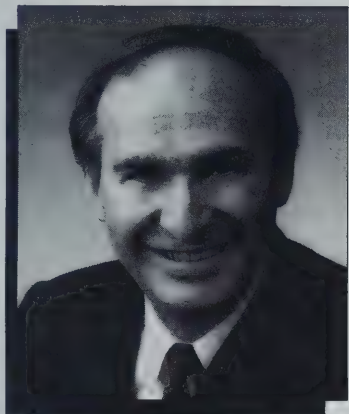


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PRESIDENT'S COLUMN

It's Been Great



Dr. Bernard Dolansky,
President

There are a lot of different words I could use to describe the past 12 months, but none of them would be as succinct or as truthful as that old and often used cliché, "Time flies when you're having fun." In fact, my year as CDA's president has flown by almost too quickly, probably because I enjoyed every minute of it.

But all good things come to an end, and my term is nearly over. The time has come to say goodbye, to reflect on where we are as a profession, and to thank the people who helped to make my year so satisfying.

Canadian dentistry has faced and will continue to face significant issues that impact directly on our ability to deliver optimal oral health care to Canadians. In the economic climate that exists in Canada today, it has never been more important for dentistry to speak with one united, national voice. CDA is that voice.

I've talked about the importance of unity frequently during the past year, because it's a message that bears repeating. But unity isn't what this, my last "President's Column," is about. There's too many

other things I want to say, and too many good things to remember.

Last September, when I became CDA's president, there were three goals that I wanted to achieve during my term in office: to improve CDA's financial situation, improve the membership numbers in Ontario, and provide sound, reasonable leadership to the profession.

It's been my experience that short-term objectives are more likely to be met when they are formulated with long-term goals in mind, possibly because this approach allows you to focus more clearly on what you're trying to accomplish. This can be a challenge in an association like CDA, where ongoing issues are interspersed with a seemingly constant barrage of crises. It gives me a great deal of satisfaction to say that we were able to deal with the day to day problems this year without losing sight of our broader goals.

For a variety of reasons, CDA operated at a deficit in 1990 and 1991. Our goal for 1992 was to achieve a surplus. And we did. CDA's audited financial statement for the 1992 fiscal year shows that revenues exceeded expenses by about \$200,000.

In the membership area, our goal was to stop the slow decline in members from our largest voluntary province, Ontario. Gaining just one more Ontario member this year would have been an accomplishment in itself. We did even better. In fact, we expect that CDA's ranks will be swelled by 50 additional Ontario members by year's end.

Our third goal, and the one that I think was probably the most important in the long term, was to promote leadership and team building. We all know that dental organizations, at every level, have a constant turnover of leadership. They rely on volunteers, primarily dentists, who want to give something back to their profession.

Traditionally, we have taken what could be an inherent organizational weakness and turned it into a strength. In effect, by changing our leaders on a regular basis,

we have ensured that our dental associations benefit from a constant inflow of fresh ideas and energy. At the same time, because CDA is a large, complex organization, we have been able to maintain continuity in leadership by maintaining a full-time professional staff.

It's a combination that we've used with great success. CDA's effectiveness results from our volunteer leaders and our staff working together as a team. Our staff has the expertise, knowledge and experience to offer sound advice to our leaders, who in turn give clear direction back to the staff.

Each CDA president also has the opportunity to work with the various volunteer dentists who serve on our executive council, committees and councils. This year, CDA was blessed with a superb team of representatives from right across Canada. All of them helped to make my presidential year enjoyable and easy. I'd like to extend special thanks to the members of executive council: John Diggins, Richard Sandilands, Bernie White, Jim Brookfield (our incoming vice-president), Barry Dolman, and Toby Gushue. I'd also like to thank my management committee: Bryun Sigfstead, who moves up to president-elect, and Ray Wenn of Prince Edward Island – who was everything one could ask for in a president-elect and will make a superb president. Finally, I'd be remiss if I didn't also extend my sincere thanks to executive director Jardine Neilson and the rest of CDA's hard-working, talented staff.

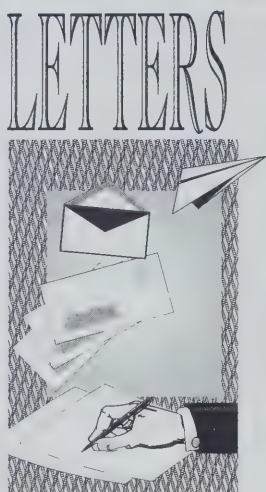
It's difficult for me to say goodbye to an organization and people that have taught me so much, particularly when the learning experience was so enjoyable. Perhaps the most appropriate way is to address the owners of CDA – the dentists of Canada who are members of the association. To all of you, I say a heartfelt thank you. It's been a great year.

*Bernard Dolansky, BA, DDS, MS
President of the Canadian
Dental Association*

JOURNAL

August/
Aout
1993
Vol. 59
No. 8

LETTERS



Lack of Risk of HIV Transmission

A recent report from the Centers for Disease Control (CDC) presented an additional case of probable transmission of HIV from the "Florida dentist" to his patients, bringing the total number of cases to six out of 1,100 patients who have submitted to serological testing ("CDC Reports 6th Acer Patient Diagnosed With HIV." News Update. *J Can Dent Assoc* 59(7):573, 1993). In these cases, genetic sequencing linked the dentist's virus to that of the six patients.

The same report reviewed continuing studies of 57 HIV-infected health care workers and 19,036 patients. No HIV-positive patients were identified in 46 of these practices (23 dentists or dental students), where 11,529 patients were tested. In 11 practices (six dentists), where 7,507 patients were tested, 92 HIV-positive patients were identified. Of these, 86 had completed assessments and the others remain in progress. Five of these 86 patients did not have established risk factors for HIV. Three of the five patients completed genetic sequencing and were not found to be consistent with infection from the provider.

There have been no cases of transmission from a health care worker identified, worldwide, other than the single cluster of

cases in Florida. Each additional case in this single cluster, with none occurring in any other setting, adds further support to previous conclusions that this was an unusual case. There has been no evidence to support instruments in transmission. Indeed, the virus was similar to that of the dentist. Similarly, transmission of hepatitis B virus to patients has been identified only when the health care worker was infected and, again, instrument disinfection and sterilization has not been implicated.

Additional speculation about the mechanism of transmission from the Florida dentist has included intentional transmission. There have recently been media reports supporting this possibility, but they remain highly speculative at this point.

An interesting variation on unintentional transmission follows: HIV may cause peripheral neuropathies that may affect sensation as well as motor control. It is possible that altered peripheral sensation and lack of motor control may have allowed injury by the dentist that was not recognized during treatment. In addition, HIV may cause primary central nervous system infection and the diseases associated with CNS infections and tumors.

In conclusion, the mechanism of transmission will never be known with certainty. However, we can continue to reassure the public due to continuing evidence that reaffirms the lack of risk to patients with the current infection control guidelines in place.

Joel Epstein, DMD, MSD
Vancouver, B.C.

Thanks to the CDA President

I wish to thank CDA's president, Dr. Bernie Dolansky, for the thought-provoking comments that appear consistently in his President's Column. I was also particularly impressed with his recent

President's Letter to CDA members dealing with two important issues – the upcoming CBC *Prime Time News* program on insurance fraud and the risks of Hepatitis C.

I think the *CDA Journal* is great. It has pertinent up-to-date scientific and clinical articles and it is the only journal that keeps Canadian dentists informed on the important issues of the day within our profession.

Elwood S. Mitchell, DDS
Ottawa, Ontario.

Journal Appreciation

The improvements realized in the style, format and content of the *Journal* are tremendous. It is my privilege that my employer passes all publications on to the staff. We find this publication both informative and educational, and congratulate you on your diligence and commitment to "turning things around."

Lane Shupe, CDA
Chairperson, Certified Dental Assistants Society of B.C.

Fraudulent Claims

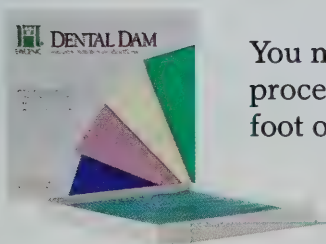
I wish to congratulate Dr. Dolansky on an excellent President's Column in the June issue of the *Journal* ("The Goose That Lays the Golden Egg." *J Can Dent Assoc* 59(6):497, 1993).

I particularly enjoyed the paragraph pointing out that it is not the insurance companies that bear the loss from fraudulent dental claims, but employers. Your upbeat tone made for enjoyable reading and your portrayal of the value of employer-sponsored dental plans to your membership was well-said.

K. Frederick Holmes
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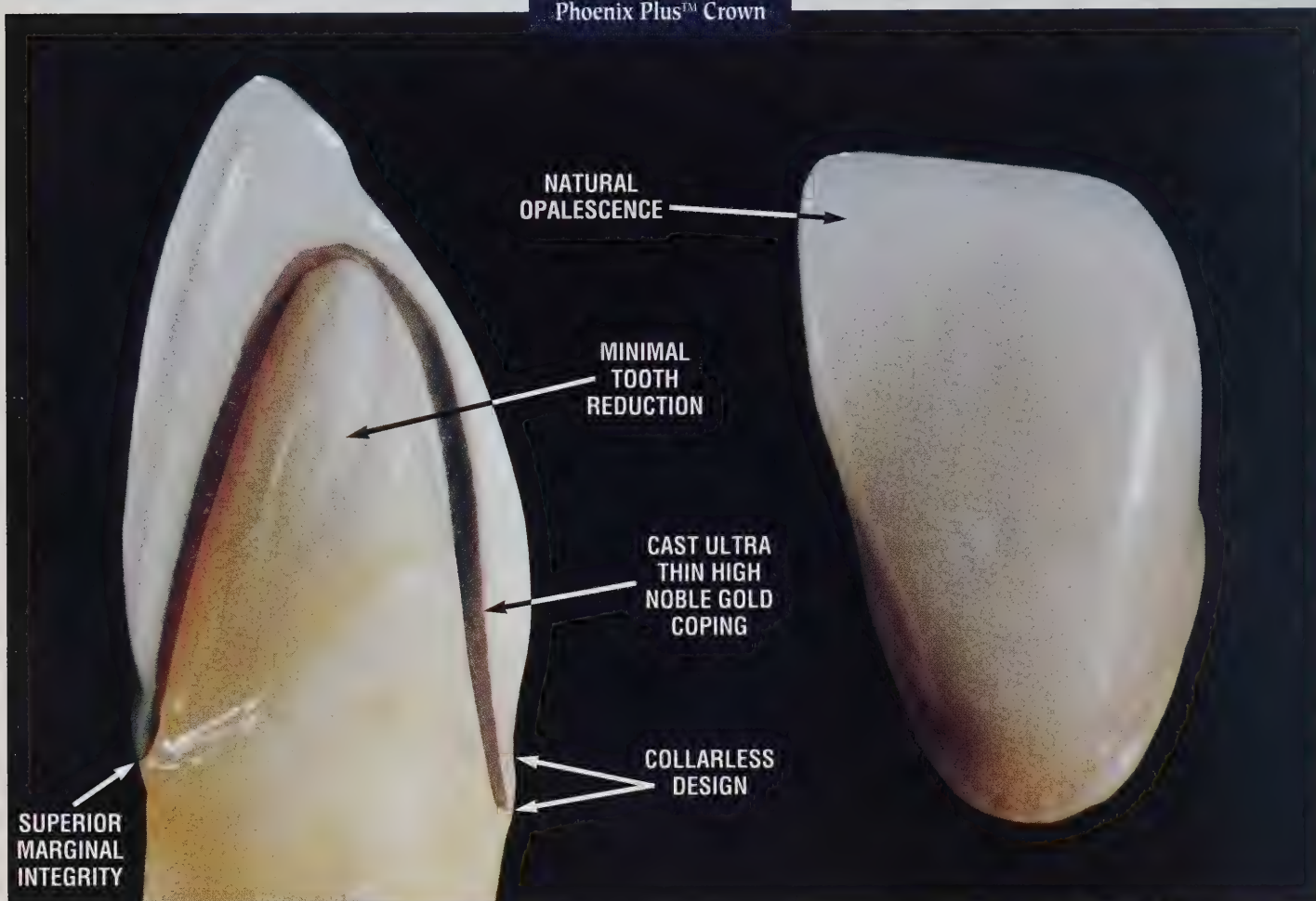
¹Lareto, JI. Pros. Dent., 16:758-765, 1966.

²Cochran, Miller, Sheldrake, J. Amer Dent. Assn., 119:141-144, 1989.

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BOOK REVIEWS

Current Controversies in Temporomandibular Disorders.

Proceedings of the Craniomandibular Institute's 10th Annual Squaw Valley Winter Seminar

Edited by Charles McNeill

1992, Quintessence Publishing Co., Inc. Illinois
194 pages

The 30 papers presented in this book were originally presented during the proceedings of the Craniomandibular Institute's 10th annual Squaw Valley winter seminar.

Participants at the January 23-27, 1991, seminar included anatomists, physiologists, oral and maxillofacial surgeons, orthodontists, a radiologist and several dentists with experience in treating patients with temporomandibular joint disorders (TMD). Eleven participants were from the United States, with one presenter each coming from Canada, Australia, and Sweden. Five panel discussions are also reported in the proceedings.

To quote the editor's preface, *Current Controversies in Temporomandibular Disorders* "represents the various and, at times, conflicting views on...TMD...in 1991."

The papers are divided into four groups: 1. prevalence, associations and diagnostic classification; 2. etiologic factors; 3. evaluation and diagnosis; and, 4. management.

As with all multi-authored books, there is considerable variation in the scientific standards of the papers presented. For example, the number of references cited ranges from more than 70 in a paper on muscle physiology to none whatsoever in a paper on arthroscopy.

In the end, the reader is left with the overwhelming impression that a state of confusion surrounds TMD, especially in regard to etiology, pathogenesis and treatment. Only a few facts emerge from the

welter of uncertainty. For instance, splints with occlusal pressures carefully and evenly balanced are of great therapeutic value, although the reasons for this effect remain unclear. Perhaps splints reduce intra-joint pressures, or possibly, by removing cuspal guidances, they indirectly relieve pain due to muscle spasm. Then again, they might act as a "behavior modification tool," as one participant suggests; or perhaps they act as "placebos," as another author suggests.

However, it should come as no surprise that knowledge of an effective therapy has antedated an understanding of its mode of action. Occlusal splints, for example, have been used to relieve the pain of TMD for 50 years or more. And in the area of heart failures, digitalis was effectively used for centuries prior to any real understanding of how it worked.

No new evidence is presented on the potential therapeutic efficacy of the so-called repositioning splints. One or two participants still recommend their use in selected cases of anterior disc displacement, but fail to explain how such a selection may be made. In the review of TMJ arthroscopy, which did not list any references, the reports of the presence of fibrous scar tissue in joints with displaced discs makes it seem improbable that repositioning splints can be expected to achieve their desired results.

Another incontrovertible fact, derived from arthrography and magnetic resonance imaging, is that in many cases of TMD there is internal derangement of the joint. This new knowledge only became widely accepted in the early 1980s, and the therapeutic consequences are still not fully worked out. Surgical repositioning of displaced discs, which was thought to be the logical solution to the problem, has proved disappointing. Several of the participants recommend that displaced discs should be accepted and treated by conservative means using splints and any necessary occlusal adjustments rather than by more radical means.

The old idea that TMD is essentially and usually of myofascial origin resulting from diurnal parafunctional habits dies hard. Nocturnal bruxism, on the other hand, is without doubt a major factor in a proportion of cases of TMD, and the pathogenic effects of this phenomenon can also be largely obviated by an appropriate occlusal splint.

However, there is still no generally accepted classification of TMJ diseases and disorders, each with distinct and delineated diagnostic criteria from which appropriate treatment might be deduced and provided. The development of a clearly defined classification of this sort must remain a primary objective of workers in the field.

Despite the "various and at times conflicting" opinions expressed in this book, it is a compilation of considerable value and interest. Recognition of ignorance and confusion is a necessary first step to the development of a greater understanding in any field of knowledge. One can only hope that this publication will stimulate further studies leading, ultimately, to more effective treatment for TMD sufferers.

Reviewed by:

J.H.P. Main, BDS, PhD, FRCD(C), FRC Path.

Professor and head, department of oral pathology, faculty of dentistry, University of Toronto.

Practical Treatment Planning for the Paedodontic Patient

By Anthony S. Blinkhorn and Ian C. Mackie

1992, Quintessence Publishing Co., London, England
145 pages, color and B&W photographs.

It is very painful for a pediatric dentist to review a book like this one. The book is presented like a winner – it is well printed, clean, and well laid-out – and I naturally

JOURNAL

August/
Août
1993
Vol. 59
No. 8

expected that it would also contain the latest clinical data. Unfortunately, my expectations were not fulfilled. In fact, the book is seriously compromised by a number of errors and omissions.

Part 1 (pages 13-95): This major section is by far the best portion of the book. It covers topics such as: the anxious child, trauma, medically comprised children, the physically handicapped, and those with intellectual disorders, but it does so very rapidly. Chapter 12, "Integrating the Information," for example, presents six treatment plans in eight pages, without including even one X-ray or picture of any case. Furthermore, growth or dental age is not mentioned anywhere. The authors try to illustrate their decision-making process, but are unable to justify their diagnosis to the reader. In the end, they can only conclude that such expertise comes with experience!

Part 2: This portion contains a series of 43 questions and answers that are totally unrelated to Part 1, and are listed in no particular order. For example, question seven reads: "What are the contraindications to inhalation sedation?" In the answer, the 5th contraindication for a pedodontic patient is listed as: "A female patient who is pregnant or who might be pregnant."

Case Studies: Fifteen of them, or rather 14 color pictures and one PA radiograph are presented, each accompanied with a few lines of text. Based on this, the reader is expected to make a differential diagnosis and suggest a treatment! For example, case number six shows a child of approximately three years old with severe "bottle caries" and no clinical crowns left. The treatment suggested by the authors is: "Fluoride varnish applied to the carious lesions to arrest the carious process." The authors further state that there should be no other treatment, "unless the child complains of pain or develops pathology related to the teeth." I don't believe it!

For case number 13, the answer that appears on page 1,333 is wrong and requires a correction. Teeth 81 and 71 on the lower jaw could not be involved in causing

hypoplasia of 11 and 21. Most readers will know that the answer should have referred to teeth 51 and 61.

My opinion of this book, with all due respect to the authors and no prejudice intended, is that it illustrates the poor standard of pediatric dentistry that prevails in Europe today. The book is thin, contains little scientific or clinical data of interest, and is beefed up with empty pages

and useless appendices. Dentistry for children involves much more than is portrayed in this book, and the information it presents will be of little if any value to Canadian dentists. The book's title should be modified to read: "Practical Treatment Planning for the Pedodontic Patient...25 years ago!"

Dr. Victor L  gault, DDS, Cert. (Pedo) Montreal, Qc

Continuing Education 1993-1994

University of Manitoba

Oct. 23: Recent Advances in Diagnostic and Surgical Sciences

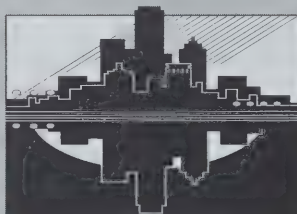
Dec. 4: Focus on the Future of Cosmetic Dentistry (Alpha Omega Memorial Lecture).

Feb. 11, 1994: Endodontic Problem Solving in the '90s

March 4-5: Level II Complexity Basic Molar Root Canal Therapy (Lecture and Laboratory)

For more information, contact:

Ms. Darcy Duggan, Coordinator, Continuing Dental Education, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave, Winnipeg, Manitoba R3E 0W3. Tel: (204) 789-3331



University of Toronto

Sept. 9-11: Osseointegration in Clinical Dentistry Surgical & Prosthodontic Aspects of Osseointegration for Edentulous Patients

Sept. 23, Oct. 21, Nov. 18, Dec. 9, Jan. 20, 1994, Feb. 24, 1994, Mar. 24, 1994: Evening Program in Periodontics

Sept. 30, Oct. 1, 2: Orthodontics for the General Practitioner



Oct. 2: Symposium: Perplexing Problems in Endodontics

Oct. 23, 24: Preventive Dentistry Forum

Oct. 22, Nov. 12: CPR-Basic Rescuer and Recertification

Oct. 29: Endodontic Update

Oct. 30: Photography in Dentistry

Nov. 6, 13: Periodontal Therapy — The Clinical Role of the Dental Professional

Nov. 6: Visual Communication

Nov. 13, 14: Orthodontics Technique course: Speed Appliance

Nov. 13: Oral Diagnosis and Dental Management of Medically Compromised Patients

Nov. 18-21: Workshop on Quality Assurance in Dentistry

Nov. 25, 26, 27: Nitrous Oxide in the Dental Practice

For information, contact: University of Toronto, Continuing Education, 124 Edward St., Toronto, Ontario M5G 1G6

Tel: (416) 979-4503

CDA LIBRARY

What's New In the Library This Month?

Rubber Dam

To compliment Dr. William Liebenberg's feature story on "Rubber dam access considerations in endodontics: anterior teeth" (see page 663 of this month's *Journal*), the library has located and compiled a series of articles on rubber dam. The articles listed on this page have been assembled using a computer database known as MEDLINE, and are available to CDA members at a nominal fee. To get your package, simply call CDA's library at 1-800-267-6354.



Each month, the library prepares a new package of articles. A list of the articles contained in this special rubber dam package appears below. A list of the articles contained in any of the library's other great packages can be requested at any time simply by calling the library.

1. Baldauf, K.W. "A simplified method of rubber dam placement." *J Prosthet Dent* 1987; 58(2):256.
2. Brownbill, J.W. "Double rubber dam." *Quint Int.* 1987; 18(10):699-700.
3. Champion, M.A., Kugel, G. and Gruskowski, C. "Evaluation of a new isolation device." *Oper Dent.* 1991; 16(5):181-5.
4. Dietz, E.R. "The role of the dental assistant in rubber dam preparation, application, and removal. Part II." *Dent Assist.* 1988; 57(5):4-6.
5. Dietz, E.R. "The role of the dental assistant in rubber dam preparation, application, and removal. Part I." *Dent Assist.* 1988; 57(4):34-7.
6. Forrest, W.R. and Perez, R.S. "AIDS and hepatitis prevention: the role of the rubber dam." *Oper Dent.* 1986; 11(4):159.
7. James, J.S. "Rubber dam isolation of fixed partial denture." *J Prosthet Dent.* 1993; 69(2):237.
8. Jones, C.M. and Reid, J.S. "Patient and operator attitudes toward rubber dam." *ASDC J Dent Child.* 1988; 55(6):425-4.
9. Joynt, R.B., Davis, E.L. and Schreier, P.H. "Rubber dam usage among practising dentists." *Oper Dent.* 1989; 14(4):176-81.
10. Miller, D.A. "Indispensable rubber dam." *CDS Rev.* 1991;

84(2):33-5.

11. Neiburger, E.J. "Hazards of the rubber dam." *N.Y. State Dent J.* 1990; 56(1):22-4.
12. Nimmo, A. and others. "Particulate inhalation during the removal of amalgam restorations." *J Prosthet Dent.* 1990; 63(2):228-33.
13. Pannkuk, T.F. "Endodontics isolation: rubber dam application for difficult cases." *Endod Rep.* 1990; Summer-Fall:16-8.
14. Perez, R.S. and Forest, W.R. "High-risk dentistry (AIDS and hepatitis): role of the rubber dam." *Natl Dent Assoc.* 1988; 44(1):25-7.
15. Smales, R.J. "Effect of rubber dam isolation on restoration deterioration." *Am J Dent.* 1992; 5(5):277-9.
16. Strassler, H.E. "Isolation of the field more important than ever." *J*

Esthet Dent. 1991; 3(4):154-5.

17. Van Dijken, J.W.V. and Horstedt, P. "Effect of the use of rubber dam versus cotton rolls on marginal adaptation of composite resin fillings to acid-etched enamel." *Acta Odontol Scand.* 1987; 45(5):303-8.

18. Wong, R.C. "The rubber dam as a means of infection control in an era of AIDS and hepatitis." *J Indiana Dent Assoc.* 1988; 67(1):41-3.

Recent Acquisitions

The following texts have been received by the library and are available for loan to members of CDA for \$5 each (to cover shipping and handling).

1. Alling, C. *Dentalveolar surgery.* Oral and Maxillofacial Clinics of North America. February 1993.
2. Donoff, R.B. *Manual of Oral and Maxillofacial Surgery.* Mosby : 1992.
3. Mathog, Robert H. *Atlas of craniofacial trauma.* Saunders : 1992.
4. Misch, Carl E. *Contemporary Implant Dentistry.* Mosby : 1993.
5. Papas, A.S. *Geriatric dentistry : aging and oral health.* Saunders : 1993.
6. Pogrel, M. Anthony. *Malignant tumors of the maxillofacial region.* Oral and Maxillofacial Clinics of North America. May 1993.

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Red Deer Dentist New Alberta President



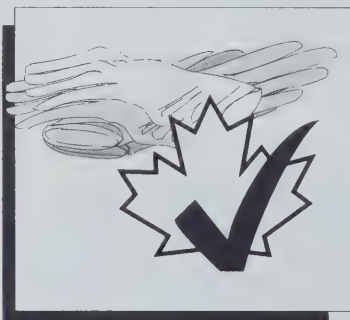
Dr. W.J. Hollingshead

Dr. W.J. (Bill) Hollingshead has begun his term as president of the Alberta Dental Association.

Born in Edmonton, Alberta, Dr. Hollingshead received a bachelor of science degree from the University of Alberta in 1975. He was awarded his dental degree from the same university in 1977, and has maintained a general dentistry private practice in Red Deer since 1978.

Serving with Dr. Hollingshead on the 1993-94 Alberta executive are: past-president, Dr. J.W. Blair, Calgary; president-elect, Dr. W.J. Sharun, Edmonton; vice-president, Dr. R.C. Beauchamp, Edmonton.

CGSB Issues Glove Warning



The Canadian General Standards Board (CGSB) has issued a warning to medical glove users and buyers.

In a bulletin dated June 7, Mr. David C. Young, the program manager of CGSB's quality certification branch, stated that effective May 28, CGSB has delisted Safe+Touch Latex Examination Gloves, non-sterile, that carry the CGSB certification mark.

"Certain lots of these gloves do not comply with the water tightness requirement of our standard CAN/CGSB-20.27-M91," said Mr. Young... "The licensee of these glove brands is A.R. Medicom of Ville St. Laurent, Quebec."

B.C. Dental Assistants Hold Annual Meeting

Food and learning went hand-in-hand May 15, when the Certified Dental Assistants Society of British Columbia held its annual general meeting, elections and awards in Kelowna, B.C.

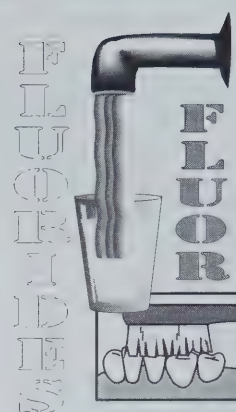
The meeting's "brunch and learn" format featured Ms. Maureen Symmes, who spoke on the national board exam and national certification.

Members of the society's 1993-94 board of directors are: Lane Shupe, Kelowna, chairperson; Beverley Arduini, N. Vancouver, treasurer; and Janice van Veen, Coquitlam; Alison Hall, Salmon Arm; Caroline Thibault, Prince George; Patti Wood, Prince George; Susan Kennedy, Richmond; and Michele Rosko, Port Moody; directors.

Researchers Claim NaF Toothpaste More Effective

Based on the results of a Fluoride Scientific Advisory Group (FSAG) study, toothpastes containing sodium fluoride (NaF) are more effective at preventing caries than toothpastes containing sodium monofluorophosphate (SMFP).

The results, released in June at a press conference in London, England, are based on data collected during a review of 44 clinical studies involving over 20,000 patients. That process culminated last fall, when FSAG met in Toronto. The results of the meta-analysis of head-to-head



trials initiated by FSAG showed that NaF reduced caries by 6.4 per cent (0.29 DMFS, decayed missing or filled surfaces) over a two- to three-year period relative to SMFP.

An analysis of the research conducted by FSAG will be published in the July/August issue of the *Journal of the European Organization for Caries Research*.

Representatives from CDA, the Canadian Dental Hygienists Association, and dental journalists and researchers from a dozen European countries attended the London press conference, which was hosted by Procter and Gamble (the makers of Crest toothpaste).

Members of FSAG included: Drs. George Stookey, Indianapolis, Indiana; Paul De Paola, Cambridge, Massachusetts; John Featherstone, Rochester, New York; Ole Fejerskov, Denmark; Mary Johnson, Princeton, New Jersey; Albert Kingman, Bethesda, Maryland; Ingolf Moller, Denmark; Saul Rotberg, Mexico; Kenneth Stephen, Glasgow, Scotland; and James Wefel, Iowa City, Iowa.

Nfld Honors Distinguished Dentists

The Newfoundland Dental Association (NDA) has honored three of its distinguished dentists.

During the association's recent annual meeting, the Distinguished Service Award – a new award that recognizes outstanding and continuous service to the profession – was presented to Dr. David Peters. In addition, Drs. John King and Roy Goodwin were honored with life



CDA president Dr. Bernie Dolansky and NDA president Dr. James Miller pose with Newfoundland award recipients. Left to right: Dr. Miller; Dr. David Peters, Distinguished Service Award; Dr. John King, Life Membership; Dr. Roy Goodwin, Life Membership; Dr. Bernie Dolansky, CDA president.

memberships in NDA in recognition of their outstanding contributions to the art and science of dentistry, their provincial association and their communities.

Dr. Peters, a 1950 graduate of Dalhousie University, has held numerous offices in NDA over the years, and is a past president of CDA (1972-73). He was also chairman of the Canadian Fund for Dental Education (CFDE) from 1982 to 1985.

NDA's 1993-94 executive are: president, Dr. James Miller; president-elect, Dr. Gillian Page; vice-president, Dr. Gary Butler; past-president, Dr. James Messer; and treasurer, Dr. Paul Walsh. Dr. Gary MacDonald continues in his role as executive director. Dr. Toby Gushue is Newfoundland's representative to CDA's board of governors and represents the Atlantic Provinces on CDA's executive council.

Brig.-Gen. J.F. Begin Honored by Pierre Fauchard Academy

Brig.-Gen. Fred Begin has been awarded a plaque of recognition by the Pierre Fauchard Academy for his significant contribution to Canadian dentistry.

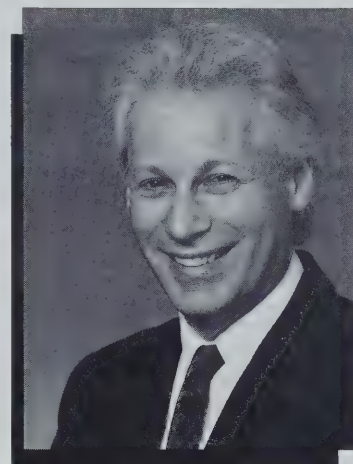
Brig.-Gen. Begin, who retired in July after a 36-year career in the Canadian Armed Forces, received

the award April 30 during the academy's 1993 annual meeting in Toronto. He was made a member of the prestigious organization in 1989.

B.C. Dentist Elected President of CAP

Dr. Peter M. Munns of Vancouver, British Columbia, has been elected president of the Canadian Academy of Periodontology (CAP). After receiving his BDS from the

University of London in 1965, Dr. Munns went on to obtain a M.Sc.D. at Boston University in 1978. He maintains a private periodontics practice in Vancouver and Coquitlam, as well as teaching periodontics at the University of British Columbia.



Dr. Peter M. Munns

Serving with Dr. Munns on CAP's executive are: president elect, Dr. Michel Couture, Montreal; secretary, Dr. David Singer, Winnipeg; Dr. Marlene Mader, St. Catharines, Ontario; and member at large, Dr. Patrick Pierce, Edmonton. Dr. Malcolm Miller of Calgary continues in his role as editor of the academy's newsletter.



Brig.-Gen. Fred Begin receives the Pierre Fauchard plaque from Dr. Martin Naimark, the international president of the Pierre Fauchard Academy. Left to right: Brig.-Gen. Begin, Dr. Naimark, Dr. Michael Crompton of Moncton, vice-president of the Pierre Fauchard Academy, Dr. Sheldon Claman of Winnipeg, Canadian trustee, and Dr. Kevin Roach, of Pembroke, Ontario trustee.

Brig.-Gen. J.F. Begin Retires

After a military career spanning more than 35 years, Brig.-Gen. J. Fred Begin retired last month as director general of the Canadian Forces Dental Services (CFDS).

Born in Moncton, New Brunswick, Brig.-Gen. Begin obtained his BA and DDS from the University of Montreal in 1954 and 1959, respectively, before receiving specialty training in dental public health at the University of Toronto in 1970. He joined the Forces in the 1950s, during the third year of his undergraduate dental training.



Brigadier-General J. Fred Begin

During his career, Brig.-Gen. Begin served with 4 Canadian Infantry Group in Germany, at Canadian Forces Base (CFB) Winnipeg, and as an instructor at the Canadian Forces Dental Services School in Borden, Ontario. He was appointed as the Forces' director of dental treatment services in 1982 and as commandant of the Dental Services School in 1985.

Brig.-Gen. Begin was appointed Queen's Honorary Dental Surgeon to Her Majesty Queen Elizabeth II in 1983, and was recently awarded both the Canada 125 Medal and the Canadian Forces Medal in recognition of his service with NATO.

Brig.-Gen. Begin was appointed director general of Canadian Forces Dental Services in June 1986. He served for six years on CDA's former council of health care and with the Canadian Standards Association (CSA), from 1976 to 1982. He was

also a member of the CDA board of governors for six years.

Brig.-Gen. V.J. Lanctis



Brigadier-General V.J. Lanctis

The new director general of Canadian Forces Dental Services is Brig.-Gen. Victor Lanctis. Born in Montreal, he received his BA from St. Thomas Aquinas College in Valleyfield, Quebec, in 1962 and his DDS from the University of Montreal in 1966. Brig.-Gen. Lanctis was commissioned in the rank of second lieutenant in 1964, under the dental officer subsidization plan.

Following graduation from dental school, Brig.-Gen. Lanctis was posted to various Canadian units before seeing service in Europe in 1969. His European tour included assignments to Sardinia in 1970 and Cyprus in 1971. In 1975 he qualified as a military parachutist.

Brig.-Gen. Lanctis was promoted to the rank of lieutenant-colonel in 1975. Two years later, he became a staff officer in the directorate of dental treatment services at National Defence Headquarters in Ottawa. In 1982, with the rank of colonel, he was appointed commanding officer of 15 Dental Unit and command dental officer for Mobile Command, where he served until he was posted to Winnipeg as the commanding officer for 14 Dental Unit and command dental officer for Air Command in 1987.

In 1987, Brig.-Gen. Lanctis was also awarded the Edgemoor Trophy for his work on behalf of the dental militia. He was granted a commissioner's citation from the Ontario Provincial Police in 1988 and awarded the Medal of Bravery by the Governor General of Canada in 1989. This year, he received the Canada 125 Medal and the Canadian Forces Services Medal in rec-

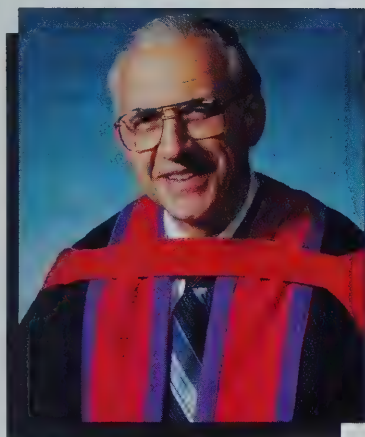
Dental Materials and Devices Committee Meets In Ottawa



CDA's committee on dental materials and devices met in Ottawa, May 28. Standing, left to right: Mr. Brian Henderson, CDA's director of professional services; Dr. Dennis Smith, Toronto; Mr. George Osterbauer, DIAC rep., Toronto; Mr. Bill Cowie, ISTC rep. Ottawa; Dr. Burton Conrod, Sydney, N.S.; Dr. Len Johnson, London, Ont.; Dr. Attar Chawla, Health and Welfare Canada rep., Ottawa; Dr. Peter Williams, Winnipeg, Man.; Mr. James O'Reilly (guest), Toronto. Seated, left to right: Dr. Bernie White, executive liaison, Saskatoon, Sask.; Dr. Derek Jones, chairman, Halifax, N.S.; and Ms. Christiane Dowsing, CDA committee coordinator.

ognition of his service with NATO, and was nominated Queen's Honorary Dental Surgeon.

Dr. E.R. Ambrose Retires



Dr. Ernest R. Ambrose

After 43 years of dedication to the dental profession, Dr. Ernest R. (Ernie) Ambrose officially retired June 30.

But as those who know him well will have already realized, Dr. Ambrose will never really retire – his heart and mind will always be linked to his profession. Besides, in his new role as professor emeritus with the University of Saskatchewan's dental college, he will continue to influence dental students for years to come.

Born and raised in Montreal, Dr. Ambrose's early education was interrupted by the Second World War. He served in the Royal Canadian Navy from 1943 to 1945, returning to school to obtain his DDS in 1950.

Dr. Ambrose's entry into the dental profession was part of a natural progression that dates back to the mid 1800s. His maternal grandfather (Reynolds), his grandfather's four brothers and his great grandfather were all dentists.

Following his graduation, Dr. Ambrose entered into private practice and embarked on what was to be a long and distinguished academic career by serving on the part-time faculty at McGill University.

In 1958, Dr. Ambrose joined the McGill faculty full time and assumed his duties as chairman of the department of operative dentistry.

He was appointed dean of the faculty of dentistry at McGill University in 1970, and held the position until 1977, when he became dean of the University of Saskatchewan's dental college.

A fellow of the International College of Dentists, the American College of Dentists and the Royal College of Dentists of Canada, Dr. Ambrose was recently honored with three prestigious awards. On May 22, during the University of Saskatchewan's spring convocation, he received the Master Teaching Award. In July, the Academy of General Dentistry presented Dr. Ambrose with an Honorary Fellowship Award. And last June, at the annual meeting of the College of Dental Surgeons of Saskatchewan, he was recognized with the College's most prestigious award, an Honorary Life Membership.

Former CDA President dead at 89



Dr. George Murray Dewis,
president of CDA, 1959

Dr. George Murray Dewis, who served as CDA president in 1959, died in Halifax, Nova Scotia, June 26. He was 89.

After graduating from the faculty of dentistry at Dalhousie University in 1928, Dr. Dewis practised in Halifax until 1975. He was on the teaching staff at Dalhousie University for 33 years, retiring in 1973 as professor emeritus. Always involved in his profession, Dr. Dewis was a past president of the Halifax County Dental Society and a member of the

Nova Scotia Provincial Dental Board, where he served as secretary-registrar for 29 years. For many years, he also served as an examiner for the Dominion Dental Council and its successor, the National Dental Examining Board.

Dr. Dewis was a past president of the International College of Dentists (Canadian section), and a member of the American College of Dentists and the Pierre Fauchard Academy of Dentistry.

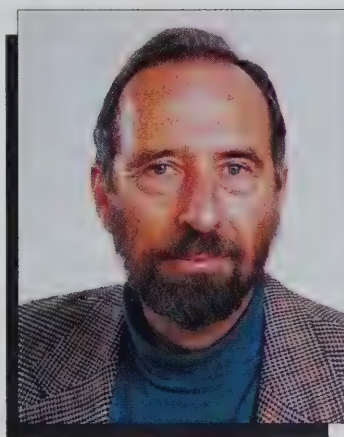
Ontario Hydro Now On-Line With CDAnet

One of Ontario's largest employers has jumped on the CDAnet bandwagon.

Ontario Hydro will now allow dental claims submitted by employees whose dental plans are with Great West Life Assurance to be processed on the CDAnet system.

Dr. Wilbur Tripp – Outdoor Photographer

The words on Dr. Wilbur Tripp's business card are surrounded by the outline of an eagle in flight. Not the type of card you'd expect to receive from a dentist, but then Dr. Tripp isn't very often found in an operatory these days. He's more at home in the woods, with a camera around his neck and an extra role of film in his pocket.



Dr. Wilbur Tripp

Dr. Tripp, who makes his home in Medicine Hat, Alberta, is now a full-time wildlife photographer. The cover of this month's *Journal* is his creation.



Dr. Richard Rayman
Willowdale, Ontario



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After graduating from the University of Alberta in 1956, Dr. Tripp maintained a private practice until 1961, when he became a dental health officer with the Medicine Hat and Southeastern Alberta Health Units. In 1989 he retired from dentistry to pursue outdoor photography as a full-time career.

The recipient of *Natural History* magazine's grand prize photo contest, Dr. Tripp's works have appeared in magazines around the world including, *National Wildlife*, *Nature Canada*, *Time*, *Stern* and *Bart*, a Japanese publication.

CFDE Announces 1993 Fellowship Awards



At its annual meeting in May, the board of trustees of the Canadian Fund for Dental Education (CFDE) approved and awarded 10 teacher training fellowships for the 1993-94 academic year. Following a tradition established over the past 30 years, CFDE teacher training fellowships are intended to promote a high calibre of dental education and research in dental faculties and allied dental health programs across Canada.

Recipients of fellowships this year are:

- Dr. Daniel Fortin, a graduate of the University of Montreal, received \$5,000. Also a fellowship recipient in 1992, Dr. Fortin is pursuing an M.Sc. in operative dentistry at the University of Iowa.

- Dental hygiene teacher Ms. Carolyn Kay received a half-fellowship for the second consecutive year. She is taking a M.Ed. specializing in health professional education at the Ontario Institute for Studies in Education (OISE). Ms. Kay received \$1,400.

- Drs. Jean-François Tessier and David Stark were both granted fellowships of \$4,500. Dr. Tessier, a graduate of Laval University and the University of Toronto, is working on a PhD with a concentration in clinical research. Dr. Stark will pursue studies leading to a M.Sc. in dentistry (endodontics) at the University of Minnesota. He is currently a part-time clinical instructor at the University of Saskatchewan.

- A half-fellowship of \$2,000 was awarded to Dr. Igor Pesun of Winnipeg, Manitoba. Dr. Pesun is a clinical and laboratory instructor in the department of rehabilitative dental services at the University of Manitoba and an associate staff member in the dentistry department at Seven Oaks Hospital. He is taking an M.Sc. in prosthodontics at the Medical College of Georgia School of Dentistry in Augusta, Georgia.

- Dr. Karen Hesse received a \$4,500 CFDE fellowship and the \$1,000 Henry M. Thornton award for the most meritorious student. A graduate of the University of Alberta, Dr. Hesse is pursuing a M.Sc. and diploma in orthodontics at the University of Washington in Seattle.

- The Warner-Lambert fellowship of \$2,500 for an existing dental teacher was awarded to Dr. David Sweet. Dr. Sweet is a dental teacher at the department of oral medical and surgical sciences at the University of British Columbia. He is conducting research at the University of Granada in Spain on the analysis of DNA cells in dental pulp as a method for forensic subject identification.

- For the second year, Ms. Jackie Smorang and Ms. Janet Erikson of Foothills Hospital in Calgary,

Alberta, shared the Warner-Lambert fellowship for hygiene teachers. They received \$2,500 to support their project "Surveying Oral Health at an Extended-Care Centre."

- The Warner-Lambert fellowship for a dental assisting teacher was awarded to Ms. Ann Cant of the Nova Scotia Community College Institute of Technology. She will attend the practical clinical course, "Higher Quality Dentistry," in Provo, Utah.

1994/95 Fellowship Applications Welcome

CFDE offers two types of fellowships: Warner-Lambert-sponsored fellowships and CFDE teacher/researcher training fellowships.

Warner-Lambert Canada sponsors three individual fellowships, for an existing dental teacher, dental hygiene teacher or a community health dental hygienist, and a dental assisting teacher. Candidates must be a full-time member of the teaching staff at a Canadian school of dentistry, hygiene or dental assisting, respectively, and have a minimum of five years experience. Community health dental hygienist candidates must be working in community dental hygiene activities in an institutional or public health setting and have five years experience.

Applicants for CFDE teacher/researcher training must be Canadian citizens or permanent residents who have completed an undergraduate course in dentistry, a dental hygiene program, or a science program, and are eligible for admission to a graduate or other advanced education program. On completion of their studies, recipients of CFDE teacher/research training fellowships are committed to teach for a minimum of two years for each year of fellowship received.

Fellowship recipients are selected by CFDE's fellowship advisory committee based on a formal application outlining the proposed course of study and related expenses, and a letter of support from a senior faculty member.

CFDE welcomes applications to the 1994/95 fellowship awards (deadline is March 1, 1994). Complete information regarding fellowships is available from university

faculty awards offices and deans' offices, or the Canadian Fund for Dental Education, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. Tel: (613) 731-0493.

OBITUARIES

Archambault, Dr. Conrad: Dr. Archambault graduated from the University of Montreal's dental faculty in 1925. He practised dentistry in Montreal, Quebec. He died in May 1993.

Chagnon, Dr. Fernando: Dr. Chagnon graduated from the University of Montreal's dental faculty in 1948. He practised dentistry in Montreal, Quebec, and was a life-member of CDA. He died May 14, 1992.

Dewis, Dr. George: Dr. Dewis graduated from Dalhousie University's dental faculty in 1928. He practised dentistry in Halifax, Nova Scotia. He died in June 1993.

Jackson, Dr. John (Jack): Dr. Jackson graduated from the University of Alberta's dental faculty in 1944. He practised dentistry in Edmonton, Alberta, for 40 years and was a life-member of CDA. He died May 25, 1993.

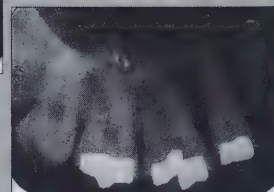
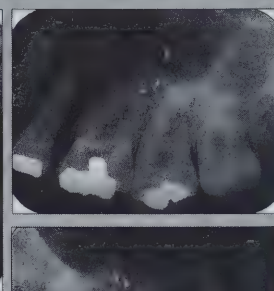
Lachapelle, Dr. Jean P.: Dr. Lachapelle graduated from the University of Montreal's dental faculty in 1946. He was a life-member of CDA. He died June 24, 1992.

McClintock, Dr. John P.: Dr. McClintock graduated from the University of Toronto's dental faculty in 1952. He practised dentistry in Streetsville, Ontario.

Wilson, Dr. Barbara Jo-Anne: Dr. Wilson earned a B.Sc. before graduating from the University of Toronto's dental faculty in 1974. She practised in Milton, Ontario, and participated extensively in dentistry before her sudden death while vacationing in the Caribbean. She was a past president of the Burlington Dental Academy and, at the time of her death, a member of the Ontario Dental Association's executive council. She was 44.

"WHAT'S IT?"

Our What's It this month takes a different twist. Rather than identifying an artifact from the CDA Museum, a reader has requested that the *Journal* help him to identify the radiopaque objects above the apices of a patient's maxillary teeth. He claims that both a dental and medical radiologist have been unable to present an explanation.



The patient is a 31-year-old female who knows of no trauma to her head, face or neck. She has had only routine dental procedures and a course of orthodontic treatment at a dental college clinic. She has never had invasive surgery or general anesthetic.

If you can help, please contact: Dr. Ralph Crawford, Journal Editor, CDA, 1815 Alta Vista Drive, Ottawa, ON K1G 3Y6.

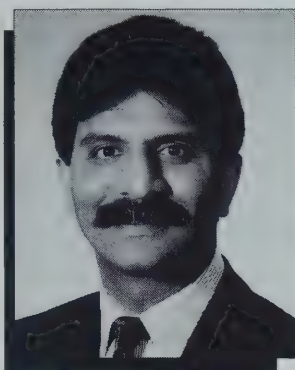
DID YOU KNOW?

Trends Affecting General Practice Dentists

The Academy of General Dentistry has identified 74 trends that will affect general practice dentists in the next decade and beyond. Here are some of them:

- ✓ Patients view dentistry as discretionary spending, and 20 per cent of the population foregoes dental care due to manufacturing and mid-level job losses, high health care insurance costs, and the effects of high divorce rates and single parent households.
- ✓ Third-party payers are not paying for implants.
- ✓ The profession has more female dentists, more culturally diverse dentists and more dentists overall who are specializing.
- ✓ Dentists need more assistance in responding to patient concerns stemming from media reports on such issues as amalgam, fluoride and infection control.
- ✓ Technology includes new advances in the science of clinical decision-making through artificial neural-networking, mathematics and computers to help dentists make diagnoses.
- ✓ Dentists are reducing the number of dental hygienists in their offices to cut overhead.
- ✓ Fewer people are interested in dental auxiliary careers, which do not offer opportunity for advancement, higher earnings, or benefits.





The Do's and Don'ts of Marketing

Imtiaz Manji, B.Sc.,
President of ExperDent

A recent discussion with a long-time veteran of the dental profession (who also happens to be the editor of this journal) prompted this month's column. It seems that in all the talk about marketing in recent issues (February, June and July), we've covered a lot of what dentists could be doing to improve their marketing, but little has been said about what they should steer clear of. In effect, the recommended do's have eclipsed the questionable don'ts.

When it comes to marketing, the old adage about not being able to please all of the people all of the time is certainly apropos. There will always be those who question your marketing moves, be it patients, potential patients, staff or fellow colleagues. A recent "Dear Abby" column illustrates this point.

The scenario is as follows: Woman goes to dentist for extensive treatment. Dentist, in appreciation, sends yellow roses with a note thanking her for being such a great patient. Woman thinks gesture most thoughtful. Woman's husband finds it inappropriate and airs his views to the celebrated advisor.

This telling scenario signals the fickleness inherent in marketing. By doing what is ostensibly the "right thing," you run the risk of having your good intentions backfire. The idea in any good marketing plan is to study the markets you're targeting and, after learning as much as you can about them, to take the appropriate actions. Al-

though there are no sure bets, you're likely to lessen the margin of error through this familiarization.

Marketing Blunders

Misguided Marketing

Creating a marketing strategy without having a clear understanding of who you're marketing to is one of the classic marketing faux pas. The resulting strategy may not be *prima facie* objectionable, and merely misguided, but it is doomed to be ineffective. An example of this would be gearing your marketing efforts solely to teens when the bulk of your practice is comprised of seniors. Instead of highlighting a denture, root caries or implant service, your marketing activities repeatedly stress the fact that patients can listen to the latest Grunge music during orthodontic treatment. The few teens you have may think you're the hippest dentist around, but your geriatric patients will feel indifferent at best and sideswiped at worst.

Misguided marketing occurs when you fail to know or pay attention to the demographic (age, income level, marital status, geographic location, mother tongue, sex, occupation, etc.) as well as the psychographic (activities, interests and opinions) profiles of your patients. (See "Quality Service and a Personal Touch: Redefining the "M" Word." 59(2):115-116, 1993, for more on this.) Before you aim the marketing pistol, you better know your target.

Product Rather Than Service Marketing

If there is one thing to keep at the forefront of your mind when it comes to marketing your dental practice, it is this: What you're offering is a service, not a product, and your marketing approach must reflect this distinction.

The aura of the assembly-line is perfectly acceptable among consumers of products. For example, consumers know full well that when they buy a car they are getting a mass-produced product that could just as easily appear in their next door neighbor's driveway. But when they're making purchasing decisions about services, these same consumers will expect to be treated differently than their neighbors because their needs are different. The job of the dental team is to identify those individual needs, convey to the patient how a particular service can meet them, and outline the benefits of treatment to the patient.

For example, if you identify that a patient is unhappy with his or her smile, you would describe (in layperson's terms) not only the way cosmetic dentistry is performed but how it would benefit that individual (i.e. eliminate tooth discoloration). It's not enough to describe the service a patient needs, you also have to explain its benefits. By doing so, you satisfy your patients' "desire for personal attention (which) is often the dominant need satisfied by a service." (Foundations of Marketing, Beckman, Kurtz and Boone.)

All too often, the dental team relies on a marketing approach that would be more suitable to a product than a service. They fail to realize that when it comes to dental services, which are intangible, consumers make their decisions based on the personal contact they have with the people providing those services or on the recommendations of other patients. For dentists, and other service providers, this is an all-important point.

"The dominant role of personal influence in the selection of services has two principal implications for services marketing: 1) added emphasis must be placed on developing a professional relationship between service suppliers and their customers, and; 2) promotional efforts must be aimed toward exploiting word-of-mouth promotion." (Foundations of Marketing, Beckman, Kurtz and Boone.)

Meeting the needs of your current patients and letting them know you welcome their referrals (even asking for them), is the best way to get your name out there. This internal marketing should be the main thrust of your marketing efforts, because it is the most cost and time effective way to proceed and, if done properly, it yields results.

Remaining Credible

With Your Colleagues

Whatever marketing ideas you're musing over, keep in mind that you don't operate in a vacuum. Your colleagues, in particular your competitors, will pay close attention to your activities. And considering that Canadian dentists are understandably leery of the sometimes dubious marketing practices of their neighbors to the south, you'd better be on your toes. The fine line between admired and abhorred marketing (even if it's allowed by your provincial dental association) can be easily crossed. And when you do cross that line, you'll certainly live to regret the inevitable results – phone calls from peers, warning letters from the local association and, if you've really offended someone, a day in court.

The first and best way to avoid the pitfalls of misguided marketing

is to know your provincial association's guidelines and regulations, and stick to them. Some dentists complain that this isn't easy to do. While they welcome the relative relaxation of the rules over the past few years, the flip side of this coin is that the marketing playing field, once black and white, has grown ever more grey. They wonder among themselves what's permissible, from what can and cannot be said in their practice sign, to who can receive their patient newsletter.

If you don't already have a copy of the provincial regulations governing the profession, request one from your association. Although they are often just guidelines, rather than absolutes, they will be helpful in your marketing decision making. If you're planning an approach that you're unsure about, ask your association if they can assist. Some provincial associations will review your marketing strategy and provide valuable feedback. This could be just what you need to make sure your plans win the admired (rather than the abhorred) response from colleagues.

Exercise common sense when it comes to marketing. If your announcement or yellow pages' listing is perceived by your own staff as even remotely garish, you can rest assured that your peers will find it positively ostentatious. The last thing you want to do is launch activities that could be degrading to you and/or the profession. If there is the smallest glimmer of doubt in your own mind, then double check your strategy with others. Run all your ideas by your staff and other people you trust, be it family members, friends or fellow colleagues. This input will help keep your marketing plan on the up and up.

With Your Patients

Considering your colleagues' opinions, although infinitely important, is not where your marketing savvy begins and ends. You've also got to factor your patients into this fickle equation.

As consumers of health services, patients are more educated and demanding than ever. If they're going to spend their discretionary income

on what they often view as an optional service, they're going to do it with the practice that best meets their needs. As you well know, they won't be judging your performance in terms of clinical expertise (as they're largely unqualified to do so). Instead, they'll judge the care they receive in your practice, from the selection of reading material in your reception area and the punctuality of your staff to your personal grooming. Most significantly, they'll be attuned to the degree of personalized service they get, mirroring the larger marketing force at work.

For instance, measures that the dental team perceives as streamlining the practice – such as tightly-booked appointments and advanced recall strategies – can sometimes be viewed with scepticism by patients. They may get the impression that you're running a factory-like operation, where patients are subjected to the same assembly-line "packaging" without regard to their individual needs. There is nothing wrong with tight scheduling, but ask yourself whether you've factored in flexibility for the emergencies that will invariably arise. Similarly, systematic recalls can be effective, but if you're telling a patient to come back every six months, you'd better tell them why (and don't let your answer be anything but personalized).

Summary

Marketing is a tough area for most dentists. They either reject it altogether (an attitude that is bound to go the way of the dinosaurs because of sheer economics) or they accept its role in principal but aren't sure about the choreography for the marketing moves. What's important for dentists who embrace marketing is that their actions are well thought out, planned and executed. Because the fallout from inappropriate or ineffectual marketing can be bottomless.

The idea (a variation of that old adage) is to please most of the people most of the time, as in the cited rose example above. (Yes, Abby sided with the wife.) ■



Meeting the Needs Of Women In Dentistry

Dr. Rod Moran, President of CDSPI

The tremendous advances that Canadian women have made in recent years are being reflected in the microcosm of the dental profession.

Over the past two decades, the face of dentistry has been slowly changing. Today, almost 40 per cent of Canadian dental school graduates are women. This is a dramatic increase from the early 1970s, when less than 10 per cent of the graduates were women.

Although males still predominate in dentistry – only 14 per cent of practising dentists are women – the profession now has a record number of women in its ranks. And if women continue to graduate at the same rate as they do today, by the year 2000 approximately 35 per cent of all Canadian dentists will be female.

There is no difference in the professional skills used by male and female dentists. However, some women dentists say there are real and significant differences in the way women approach their profession.

"At home, women tend to be the care givers, I've found that this behavior carries over into the practice," said Dr. Christena Chruszez, a Toronto dentist and past president of the Women Dentists' Association of Ontario. "This means that women dentists spend slightly more time with their patients.

"Women dentists in our association have also told us that the profession can be more physically tiring for women, especially if you have to be up late at night taking care of the kids," said Dr. Chruszez, who has been practising for more than a decade. "Like the majority of Canadian working women, female

dentists tend to share a disproportionate amount of the child rearing responsibilities."

Dr. Deborah Cooper-Lall also finds that it can be difficult to combine her family life and her profession.

"I know from my own experience that maintaining a successful dental practice and still finding time for your family is quite a challenge.

"As a dental student I was so used to bringing work home all the time that when I started practising I did the same thing," said Cooper-Lall, a recent graduate who practises in Calgary. "Now, I try to separate the two as much as possible."

Another issue that women in dentistry must deal with is the need for insurance. This is both a lifestyle and a practice management issue. If you are a female dentist, you probably contribute a significant portion of your family's income. Therefore, you need to make provisions for the financial security of your dependents in the event of accident, illness or death. In addition, you need to safeguard the health of your practice with adequate insurance coverage against threats such as fire, theft and lawsuit.

The types of insurance coverage offered to men and women dentists through the Canadian Dentists' Insurance Program (CDIP) are identical, with a few notable exceptions.

First, female participants in CDIP's basic life policy pay 40 to 50 per cent less in premiums than males. This stems from the fact that insurers underwriting life insurance policies have traditionally considered women to be a better risk than men.

In fact, the only CDIP plan in which premiums are calculated based on gender is the life policy. CDIP's life plan provides a lump sum payment for death. It provides funds for the ongoing care of your children and other dependents and pays outstanding debts, expenses and taxes in the event of your death. If you are negotiating a loan with a bank or trust company, remember that your CDIP basic life insurance policy can be used as collateral to secure a mortgage or practice expenses loan.

Second, CDIP's office overhead expense insurance plan provides a benefit to female participants that is not available to men. The plan normally covers the continuing expenses of your office such as rent, salaries, and lease costs during a period of medical disability. However, women dentists are also eligible to claim for office expenses incurred (to a specified maximum) while on maternity leave. If there are no expenses, no reimbursement is payable. To qualify, the dentist must have been enrolled in the CDIP office overhead expense plan for at least 12 months prior to the date of the child's birth.

Identifying and addressing the needs of all CDA members has always been important to CDIP and Canadian Dental Service Plans Inc. (CDSPI). Offering plan features to meet the specific and distinct needs of women dentists is just one of the ways that CDA, CDIP and CDSPI have acknowledged the increasing presence of women in the profession. We hope to continue taking progressive steps on this front. ■

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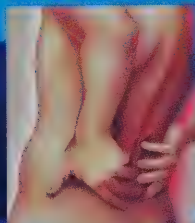
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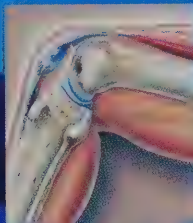
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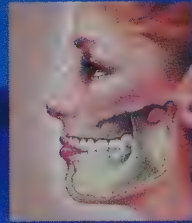
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SCIENTIFIC



Access and Isolation Problem Solving In Endodontics: Anterior Teeth

William H. Liebenberg, B.Sc., BDS (Rand)
Johannesburg

ABSTRACT

Through a pictorial presentation of case studies, this paper examines the versatility of alternative methods of retention as a means of improving the overall access to the endodontically-involved tooth. Successful endodontics is the result of precise biomechanical instrumentation involving procedural manipulations that depend on a complete and unobstructed approach to the working field. This pictorial essay is aimed principally at clinicians who would ordinarily reject rubber dam isolation in those cases where the clinical pretreatment conditions are anything but ideal.

SOMMAIRE

À l'aide de cas illustrés, cet article démontre la variété des différents moyens de rétention utilisés en endodontie pour améliorer en général l'accès aux dents à traiter. En effet, pour réussir un traitement d'endodontie, il faut des instruments biomécaniques précis permettant de bien voir et d'atteindre la zone de travail. L'article s'adresse tout particulièrement aux cliniciens qui, habituellement, n'utilisent pas de digues d'isolation en caoutchouc dans les cas où les

conditions de prétraitement sont loin d'être idéales.

Introduction

During the delivery of endodontic treatment, isolation is typically achieved through the use of rubber dam.¹⁻³ The very nature of this treatment implies that the tooth, in most instances, will have been heavily restored. Among other things, there is invariably an extensive loss of coronal tissue, restorations with poor retentive form, fixed prostheses, abnormal axial inclination, and irregularly shaped teeth. It should come as no surprise, then, that the inherent variability of the presentation constants makes endodontic isolation the most challenging isolation procedure in dentistry. The optimum isolation solution often demands a creative adaptation and modification of basic isolation skills. Although many eloquent descriptions of rubber dam application can be found in the dental literature,⁴⁻⁶ there are many instances where traditional application methods cannot be used. Alternative endodontic application methods have been introduced that, in general, focus on rubber dam application to crownless and

cone-shaped teeth.⁷⁻⁹ Almost without exception, the focal point of these innovations has been on providing a technique that not only prevents the aspiration or ingestion of endodontic hand instruments,¹⁰⁻¹⁷ but also prevents contamination of the canal space by saliva.¹⁸ However, the requirements for successful endodontic therapy go far beyond asepsis and the mandatory protection of the patient. Endodontic success is reliant on procedural perfection. Precise biomechanical instrumentation involves procedural manipulations that rely on a complete and unobstructed approach to the working field. The access provided by a well planned and properly executed rubber dam application has no substitute. This pictorial essay of case studies is aimed principally at those clinicians who would ordinarily reject rubber dam isolation in those cases where the clinical pretreatment conditions are anything but ideal. The versatility of alternative methods of retention as a means of improving the overall access to the working field is discussed.

The rubber dam methods described here are not intended as a substitute for traditional rubber dam isolation. These techniques are primarily offered as a means of motivation to encourage innovative rubber dam isolation.

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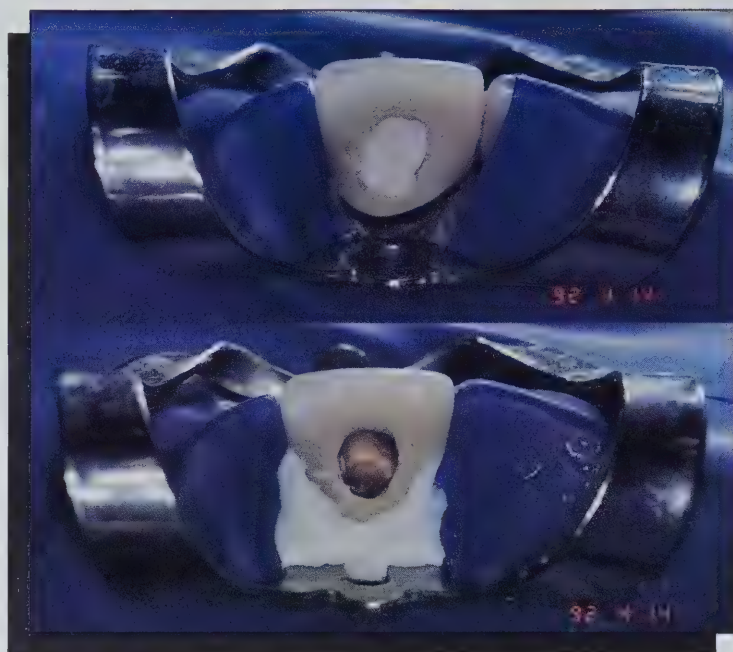


Fig. 1: Using a butterfly retainer, primary and secondary retention coincide in the isolation of this maxillary central incisor. Although the resultant access is acceptable, the lingual jaw has compromised the tooth/dam seal (top). Ora-seal is packed into the palatal dam deficiency (bottom).

Radiographic access requirements during endodontics

The presence of rubber dam that is retained with traditional metal clamps makes the production of radiographs difficult. Reid, Callis and Paterson, in a book that makes a successful attempt at providing the clinician with the basics of rubber dam application, report that radiographs are not normally taken with rubber dam in place unless this is strictly necessary.¹⁹ I believe, however, that endodontics requires radiographs to be taken with the rubber dam in place. Metal retaining clamps are designed to retract the rubber dam curtains away from the tooth that is receiving endodontic attention, and in most cases the resultant access is acceptable. It is common, nevertheless, for the bow and wings of the retainer to interfere and restrict the digital access necessitated by the intra-canal preparation. In addition, the clamp displaces the film from its normal position relative to the tooth crown.¹⁹

The cone/image shift technique²⁰ is a crucial adjunct to revealing the third dimension during endodontic treatment. However, the interpretation of the radiograph

obtained by this technique is in many instances hampered by the superimposition of metal clamps. Alternative positioning devices, although reported in the literature, have not yet gained "every day" acceptance.^{21,22} An innovative device developed at Singapore's faculty of dentistry as a prototype looks promising, and its development warrants attention. A problem encountered with traditionally-recommended radiographic endodontic techniques²⁴ is that the rubber dam is lifted to one side to allow the patient to stabilize the radiograph during the exposure. This has led the author to coin the phrase "under the dam" radiography to describe these techniques. Unfortunately, they subject the dam material to a torquing movement that invariably breaks the seal.

One of the objectives of this article, therefore, is to demonstrate how the provision of adequate access allows the practitioner to use an "over the dam" radiographic technique. It should be noted that this technique involves placing the rubber dam clamps, whenever practical, several teeth away from the endodontically-involved tooth. As a result, rubber dam stability and retention around the treated

tooth must be considered in adhering to the concept of asepsis. The solution to this problem introduces the notion of secondary retention, which is demonstrated in the course of the case studies.

Single Tooth Isolation — Uncomplicated (Fig. 1)

Anchorage of the rubber dam to either the mandibular or maxillary arches is usually accomplished with metal clamps. These are commonly referred to as retainers and are available in a variety of shapes and sizes. The jaws of the three standard anterior clamps (Dentsply Pattern C, Hygenic Ferrier 212, and Ash No. 6) can be modified by grinding them to a more suitable shape, as well as by bending the clamps to improve the jaw position on the tooth.¹⁹ This primary rubber dam retention and stability has attracted a vast amount of attention in the literature and must not be confused with what I have termed "secondary retention."

Secondary retention is a vital part of endodontic isolation and is best described as the provision of an effective seal at the dam/tooth junction. Studies of saliva leakage at this junction have stressed the importance of the seal's integrity.^{8,18} In many cases, the provision of primary and secondary retention coincides without detracting from the overall access to the working field.

The double-bow arrangement of the butterfly clamp depicted in **Fig. 1** solves many of the access problems in the anterior sextants and is often (gingival topography permitting!) the clamp of choice for single incisor treatment. Although the versatility of the Hygenic Ferrier 212 pattern clamp is reputed to allow for precise jaw placement, the final resting position of the jaws is the result of a myriad of factors. The passivity of the 212 clamp is meant to ensure that its jaws remain in place once the clamp forceps have been removed. Those clinicians who make regular use of the 212 clamp will acknowledge that simultaneous and accurate buccal and lingual placement is more the exception than the rule. Invariably, there is a sliding movement in an apical direction as the



Fig. 2a: Primary rubber dam stability, provided by adjunctive ligature retainers on either side of the operatory field, isolates the maxillary lateral incisor. The object of applying a No. 212 clamp in this instance was specifically to achieve gingival retraction in order to complete the "secondary retention."



Fig. 2b: Modification to the angulation of the jaws is easily accomplished with a carbide bur in a high-speed handpiece.⁵ Judicious gingival retraction, which is initially attained with apically-directed digital pressure to the palatal jaw, is then secured with the unilateral application of caulking compound to the bow/tooth complex.

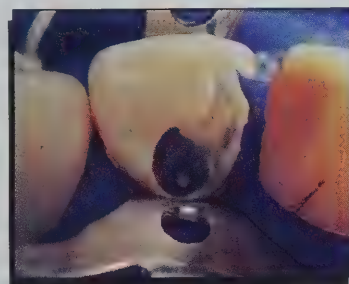


Fig 2c: Meticulous isolation planning pays dividends as the resultant access allows for thorough caries excavation. A temporary seal cannot be obtained unless the filling material is in direct contact with clean noncarious dentin.²⁷ The criteria for direct-line canal access can now be addressed within this uncompromised working field access.

jaws of the clamp accommodate to the mesial and distal slopes of the root surfaces. It is this sliding movement that compromises the "secondary retention" of the dam/tooth seal.

In the top portion of **Fig. 1**, the

width of the retainer's palatal jaw prevents inversion and approximation of the dam/tooth interface, creating a potential site for saliva ingress and the (often ignored) intraoral passage of intra-canal irrigants. These areas are easily sealed using a commercially-available sealing agent such as Oraseal (Ultradent products, Inc., Utah), which sticks to wet or dry rubber dam and gingival tissue as well as to wet or dry teeth, as depicted in the lower portion of **Fig. 1**. Weisman recently introduced an ideal caulking substance (PGZ), consisting of a mixture of denture adhesive paste and zinc oxide powder, which he applied with a disposable syringe. He also enumerated the requirements of an ideal leakage preventative material and stressed the need for ease of application.²⁵

The final resting position of the jaws on these anterior butterfly-shaped clamps is the culmination of many factors. Most clinicians agree that the secondary retentive qualities are usually compromised in these cases, and additional secondary retentive features are necessary. I have found that the use of an anterior metal retainer invariably requires the addition of a sealing compound when the retainer is applied to the tooth needing endodontic attention.

Single Tooth Isolation — Complicated (Figs. 2a, 2b, 2c)

It is imperative to evaluate the 212 clamp's fit before establishing primary retention with auxiliary retentive aids. Modifications to the curvature, size, and angulation of the jaws are easily accomplished using a carbide bur and a high-speed handpiece.⁵ In this case, initial gingival retraction was achieved with retraction cord and the palatal jaw was bent rootwards to maximise additional gingival retraction. Trial fitting also allows the number of teeth that need to be included in the isolation as abutments for compound caulking stabilisation to be evaluated.

Specifically, the object of using a 212 clamp in **Figs. 2a, 2b & 2c** was to achieve gingival retraction as primary rubber dam stability was provided by adjunctive ligature retainers on either side of the opera-

tory field (**Fig. 2a**). This view demonstrates two methods of circumferential retention. No hole has been provided for the lateral incisor — the floss is tied over and around the tooth/dam complex. A conventional floss ligature has been used as the retentive element for the canine. Note that the exaggerated buccally-orientated knot prevents the dam from overriding the ligature.

Adequate gingival retraction was required to complete comprehensive caries excavation prior to negotiating canal entry. Retraction cord provides the initial retraction and also serves to cushion the jaws of the clamp. The final resting position of the clamp is determined by the caries extension on the palatal surface. The only permissible exception to completely removing caries during the access preparation stage is where complete removal would lacerate the gingiva and compromise the isolation. In this case, isolation pre-planning has overcome this "compromise" with judicious gingival retraction, which is initially attained with apically-directed digital pressure to the palatal jaw.

Once the desired resting position is attained, it is initially stabilised (until caulked) with judicious digital pressure and then secured with the unilateral application of caulking compound. Traditional compound stabilization is often frustrating, as the softened compound must be pressed into place quickly. Stable caulking is frequently unachievable because the bow of the retainer interferes with the accurate moulding of compound to the underlying teeth. A predictable and durable caulking splint can be attained through the use of what I have termed a "compound applicator," however.²⁶ This involves placing a stick of thermoplastic caulking compound (Kerr) in the lumen of a disposable plastic syringe and thoroughly softening it in a tumbler of hot water.

A three-minute immersion generally softens the compound to a consistency that allows it to be easily extruded and readily manipulated with wet fingers once placed. The compound is first directed below the bow to fully engage the

undercut of the incisors, and then allowed to flow over the clamp prior to being moulded and firmly pressed into position with warm wet fingers. It is then flooded with water to hasten hardening. The advantage of using a "compound applicator" is that access is maintained for the entire length of the procedure and durable clamp stability is achieved with each and every application.

Meticulous isolation planning pays dividends as the access that results allows for thorough caries excavation. A temporary seal cannot be obtained unless the filling material is in direct contact with clean noncarious dentin.²⁷ The criteria for direct-line canal access can now be addressed within this uncompromised working field access.

Clampless Tooth Isolation: Alternative Methods of Retention

There are occasions where alternative retention methods are chosen above the conventional clamp method of rubber dam retention. In many instances, these methods are not only less traumatic for the patient, they are also often easier and less time consuming.

a) Wedjets Stabilizing Cord (Fig. 3)

While it is often possible for the rubber dam to be held in place solely by the friction of the interdental contact area, reliable retention (especially important during the provision of radiographic access) is best achieved using the area beneath the interdental contacts. Strips of rubber dam, dental tape, wooden wedges, and elastic rings are useful retentive alternatives. Hygenic Corp. have introduced an interproximal stabilizing cord (Wedjets) that is passed under tension through the contact point and released to lie below the contact area. After placement, the length of the cord is adjusted by snipping with a pair of scissors.

b) Modified use of anchorings (Fig. 4)

In most cases, the metal retaining clamps used to retract the rub-



Fig. 3: Strips of rubber dam, dental tape, wooden wedges, and elastic rings are useful retentive alternatives. Hygenic Corp. has introduced an interproximal stabilizing cord (Wedjets), which is passed under tension through the contact point and released to lie below the contact area.

ber dam curtains away from the tooth during endodontic intervention provide the access required for the endodontics *per se*. However, the provision of an esthetic post-obturation restoration is a crucial part of treatment in the anterior region. It is therefore imperative that isolation planning reflects the access needs of the post-obturation restoration. In many cases, the additional time needed to provide an isolation setup that satisfies the endodontic as well as the restorative requirements is indemnified by the overall proficiency within the improved access to the working field.

Fig. 4 depicts an isolation setup that allows for excellent intra-canal access as well as sufficient overall access to permit immediate and competent reattachment of the tooth fragment. Anchorings (Hygenic Corp.) are shaped like orthodontic elastomeric separating modules, and are designed to assist with rubber dam interproximal retention. In this conventional application, they are placed interproximally with much the same technique as their orthodontic counterparts. However, their circumferential placement allows for far greater rubber dam control.

Using two lengths of dental floss, the anchoring is eased through the interproximal contact with a sawing motion. The rest of the anchoring is then stretched over the occlusal surface to lie over the next approximating marginal ridges. Care must be taken not to exceed the elastic limit of these modules as their circumferential retentiveness



Fig. 4: Modified use of anchorings provides adequate rubber dam retention following the fracture of the upper left central incisor. The access requirements of the restorative procedure exceed the endodontic requirements. Thoughtful isolation preplanning allows for the exacting task of reattachment within the luxury of adequate access.²¹

will be diminished. A length of dental tape is used to ease the anchoring through the interproximal contact area until it is lying in its optimal retractive position. This circumferential anchoring is then gently eased rootwards, where it completes the rubber dam retention and allows for inversion of the rubber dam.

In this case, a nine-year-old boy presented three hours after a blow to the face with a blunt instrument. Intraoral examination showed that the upper left central incisor had suffered a fracture perpendicular to the long axis of the tooth. Notwithstanding the loss of dental structure and the pulpal exposure, the boy reported a surprising lack of symptoms. Local anesthesia and relative analgesia were followed by immediate rubber dam isolation of the four incisors. The isolation effort was intended to provide thorough antisepsis and, secondly, to secure adequate access for the anticipated bonding procedure. In the absence of canines and premolars, traditional clamp retention would have necessitated the application of anesthesia in the molar region. This modified use of anchorings made it possible to provide adequate rubber dam retention.

The access requirements of the postobturation reattachment procedure exceed the endodontic requirements. Thoughtful isolation preplanning now pays dividends, as the operator can then complete the exacting task of reattachment within the luxury of adequate access.²⁸

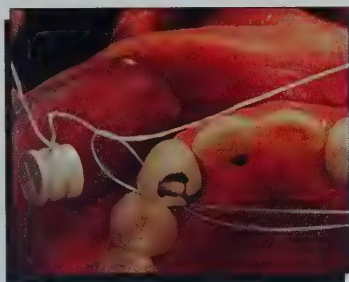


Fig. 5a: Anterior maxillary quadrant to be isolated in anticipation of endodontic access requirements to teeth 21 and 13. A rubber plunger is secured to a length of floss and then tied to the teeth. Note the use of a floss threader (Butler), which draws the floss under the solder joint of the fixed prosthesis prior to circumferential ligation.



Fig. 5b: A circumferential figure-of-eight ligature completes the isolation of the central incisors. The position of the existing access cavity on the canine is now a site of possible microbial contamination due to the proximity of the access cavity and the rubber dam/tooth junction (see arrow). Accordingly, in this case re-entry is located as far incisally as direct-line access will permit.

c) Bead Floss retainer (Figs. 5a & 5b)

A simple, disposable, quick and predictable method of retention, originally introduced by Ireland,²⁹ is "bead" assisted retention. A rubber plunger from a discarded anesthetic carpule is secured to a length of floss and then tied (in single or double units) to the teeth chosen as the limits of the working field. The unyielding quality of a triple knot is fully appreciated when the floss is sectioned to remove the "bead" retainers.

Figs. 5a & 5b depict the isolation and access solution used for an anterior maxillary sextant in anticipation of endodontic treatment to teeth 21 and 13. The bow of a 212 clamp will obscure access to the canine if it is used as a retainer on the central incisor. In addition, the iatrogenic potential of clamp application to the canine was considered eminent as a consequence of the uneven gingival topography and compromised width of the attached gingiva. For this procedure, a rubber plunger is secured to a length of floss and then tied to the teeth. Note the use of a floss threader (Butler), which draws the floss under the solder joint of the fixed prosthesis prior to circumferential ligation. A circumferential figure-of-eight ligature completes the isolation of the central. However, the position of the existing access cavity on the canine, which is the aftermath of a previous endo-

dontic intervention, is now a site for possible microbial contamination due to the proximity of the access cavity and the rubber dam/tooth junction (see arrow in Fig 5b). Fors et al have shown that the risk of contamination of a root canal is related to the distance between the cavity and the dam/tooth junction.¹⁸ Accordingly, in this case the re-entry point is located as far incisally as direct line access will permit.

Mandibular Incisor Isolation (Fig. 6)

Here, the access requirements of lower incisors are, in effect, predi-

cated by the radiographic requirements, which are seriously restricted by the combination of the shallowness of the anterior lingual vestibule and the position of the clamp. Furthermore, harnesses are not suitable for use in endodontics because of the access restrictions for film placement.¹⁹ The lower first premolars are the easiest teeth to apply clamps to. It is submitted here that the 4-4 mandibular isolation setup depicted in Fig. 6 should be the standard isolation approach for lower incisors. The major advantage of this technique is that the inter-clamp space is more than adequate for radiographic film placement. "Over the dam" film positioning is facilitated by slackening the dam off the restraints of the extra-oral frame. In those instances where the caries and oral hygiene status of the adjacent teeth make for questionable asepsis, it is best to use a single-holed dam and place the clamps over the rubber dam onto the premolar teeth. In this way, both the access and asepsis requirements are met.

Fig. 6 depicts the use of a running floss ligature that not only provides primary rubber dam retention, but also assists the inversion of the edges of the rubber at the neck of the tooth, thus completing "secondary retention."

The running figure-of-eight ligature is shown prior to its second



Fig. 6: Standard isolation recommendation for lower incisors using the first premolars as the clamp abutments. The running figure-of-eight ligature is shown prior to its second interdentary crossing. Note the saliva seepage buccal to tooth 31, which will be contained once the ligature effects inversion of the dam into the gingival sulcus.

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On June 3rd 1993, the results of a clinical review by independent dental research scientists, were released. The scientific advisory group showed that, when all the relevant worldwide data were analyzed, NaF (sodium fluoride) in a compatible abrasive system was found to be significantly more effective in preventing caries than SMFP (sodium monofluorophosphate) dentifrice ($p < 0.01$).¹ As a consequence, dentists should be recommending dentifrice containing NaF in a compatible abrasive system.¹ CREST contains *FLUORISTAT*, a formulation comprising NaF and a highly compatible silica abrasive system. In fact, it's been estimated that Canadian children who start at age seven, could experience 20% fewer cavities by the time they reach 20, by using CREST with *FLUORISTAT* instead of a dentifrice with SMFP.²

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References 1. Stookey GK et al. *Caries Research*, June 1993.

Applies for equal total fluoride levels versus SMFP.

2. Procter & Gamble, data on file based on mathematical model In: Kingman A. *Caries Research* 1993; in press.

P A A B





interdental crossing. Note the saliva seepage buccal to tooth 31, which will be contained once the ligature effects inversion of the dam into the gingival sulcus. Once the floss ligature has been secured, the clamp retainers can be removed and replaced with an alternative interproximal wedge. This not only reduces the iatrogenic insult to the tooth/periodontal complex, but also improves patient comfort as the clamps are no longer manipulated during the execution of the endodontic treatment. Radiographic access is logically improved as the clinician no longer contends with the problem of ensuring that the X-ray beam bypasses the metal clamps.

Unusual Tooth Shape

It is indeed unusual for the natural tooth shape of anterior teeth to hinder clamping efforts. The exception to this rule is partially-erupted teeth, which, in the anterior region, do not allow the clamp to be placed below the height of contour. It is, however, a rare occasion when these teeth require isolation. A more common difficulty involves clamping teeth that have previously been prepared for full coverage. The remedies reported in the literature, in order of preference, would include the following:

1. Deep-reaching clamp.³⁰
2. Acid-etch composite to tooth surface.^{7,9}
3. Grooves placed in buccal and lingual surfaces.
4. Clamp the gingiva.³¹
5. Crown lengthening.¹⁹

A far simpler and less traumatic solution is obvious when the clinician understands that clamp application to the tooth requiring endodontic attention is not necessarily intended as a means of retaining the rubber dam sheet, i.e. primary retention. Rather, primary rubber dam retention is provided by adjunctive retentive aids, which in many cases have to be placed several teeth away from the endodontically-involved tooth. Rubber dam stability and retention around the treated tooth (secondary retention)

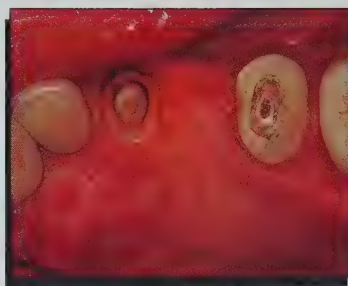


Fig. 7a: Intraoral view following traumatically-induced fracture of a fixed prosthesis. Retreatment of a nonresolving periapical lesion on the canine is to be attempted with the improved straight-line access provided by the accompanying coronal fracture.



Fig. 7b: Primary rubber dam retention is provided by a figure-of-eight running ligature to the mesial two incisors. "Secondary retention" is provided by a Hygenic Corp. number 2 clamp, which is then stabilized by injecting compound around and under the bow where it is manipulated into the contact of the isolated incisors.

then becomes an added problem that needs consideration if the concept of asepsis is to be respected. The retentive requirements of a rubber dam clamp in its secondary retentive capacity are remarkably less than in a primary retentive role. **Figs. 7a & 7b** shows the intraoral view following a traumatically-induced fracture of a fixed prosthesis and demonstrates a case that highlights this concept.

Retreatment of an nonresolving periapical lesion on the canine is planned, with an improved straight-line access provided by the accompanying coronal fracture. Primary rubber dam retention is provided by a figure-of-eight running ligature to the mesial two incisors, while circumferential ligature retention on the first molar takes care of the distal.

"Secondary retention" is provided by a Hygenic number 2 clamp, which is inherently bland in retentiveness at the best of times. This clamp is then stabilized using a compound applicator, while compound is injected around and under the bow where it is manipulated into the contact of the isolated incisors. In this instance, the retaining clamp has served to maintain the tooth/dam seal, thus fulfilling its "secondary retentive" function and allowing for perfection in isolation.

Isolation Ingenuity

There are instances where the requirements of asepsis cannot be met due to the multifarious array of presenting circumstances. However, the concept of asepsis is but



Fig. 8: The pulp of tooth 23 was accidentally exposed on removal of the maxillary fixed prosthesis. A split dam is anchored with retainers distally. A dangle completes the palatal seal. The buccal curtain is then secured with the aid of an adhesive strip modified from the disposable intraoral contacts used in electronic dental anesthesia.

one of many reasons for applying rubber dam, and it is in the patient's best interests, without exception, to use rubber dam isolation on each and every endodontic procedure. These "impossible" cases often draw on a clinician's ingenuity. Nonetheless, the isolation skills required involve nothing more than basic general dentistry, and the isolation repertoire is only limited by the clinician's inventiveness. Complex technical or management problems, as they relate to isolation, should be included in the decision as to whether a patient would benefit from a specialist referral.

Fig. 8 is offered as an example of the reward of isolation resourcefulness. On first impression, the effort may seem to be a hyperbole of publication. On closer examination the setup is nothing more than

the combination of basic isolation techniques. In this case, the coronal portion of tooth 23 was accidentally fractured when the maxillary fixed prosthesis was removed, exposing the pulpal tissues. The roots of teeth 21 and 11 are to be extracted and the sockets supplemented with Biocoral 1000 (Biocoral 1000, INOTEB, France).

The molar clamp is applied and stabilized with compound. A split dam is then placed and anchored contralaterally with a retainer on the premolar. The palatal seal is completed with the aid of a dri-angle wedged palatally under the wings of the retainers. The dri-angle is removed to allow for radiographic access. Note that the use of a safety chain is mandatory during the radiographic procedure in this now compromised arrangement.

The buccal curtain is then secured with the aid of an adhesive strip. With a little modification, the disposable intraoral contacts used in electronic dental anesthesia make the ideal adhesive strip.³² The mylar covered adhesive strip is checked intraorally for positioning and size and trimmed where necessary. The mucosa in the region of the attachment site is wiped dry and the rubber dam is retracted to its optimal position. A pair of cotton tweezers are used to place the adhesive strip in its optimal position, where it will secure the edge of the dam.

Conclusion

There are many situations where the endodontic isolation of the working field is exceptionally difficult. These cases tend to remain difficult, even for those practitioners who are familiar with all the variations of rubber dam application.

The rubber dam methods described here are not intended as a substitute for traditional rubber dam isolation methods, but only as methods that may be used when the traditional approaches appear to be inadequate. These techniques are primarily offered as a means of encouraging the use of mandatory rubber dam isolation for each and every endodontic procedure. Alternative techniques and

practical hints are aimed principally at those dentists who have rejected rubber dam because they were unaware of its ease of application and versatility. ■

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Dr. Liebenberg is a general dental practitioner in Johannesburg, South Africa.

References

1. Cragg, T.K. The use of rubber dam in endodontics. *J Can Dent Assoc* 38:376, 1972.
2. Reuter, J.E. The isolation of teeth and the protection of the patient during endodontic treatment. *Int Endod J* 16:173-181, 1983.
3. Liebenberg, W.H. Extending the use of rubber dam isolation: alternative procedures. Part 1. *Quintessence Int* 23:657-665, 1992.
4. Koton, D. Rubber dam — its uses, abuses and application *J Dent Assoc S Afr* 34:821-823, 1979.
5. Baum, L., Phillips, R.W. and Lund, M.R. *Textbook of Operative Dentistry*. Ch. 9. W.B.Saunders Co, 1988.
6. Wiland, L. An evaluation of rubber dam clamps and a method for their selection. *JADA* 87:160, 1973.
7. Greene, R.R., Sikora, F.A. and House, J.E. Rubber dam application to crownless and cone-shaped teeth. *J Endodon* 10:82-84, 1984.
8. Kahn, H., Coronal build-up of the degraded tooth before endodontic therapy. *J Endodon* 13:191, 1987.
9. Wakabayashi, H. et al., A clinical technique for the retention of a rubber dam clamp. *J Endodon* 12:422, 1986.
10. Israel, H.A. and Leban, G.L. Aspiration of an endodontic instrument. *J Endodon* 10:452-454, 1984.
11. Christen, A.E. Accidental swallowing of an endodontic instrument. *Oral Surg* 24:684-686, 1967.
12. Goliva, C.P. Accidental swallowing of an endodontic instrument. A report of two cases. *Oral Surg* 48:269-271, 1979.
13. Heling, B. and Heling, I. Endodontic procedures must never be performed without the rubber dam. *Oral Surg* 43:464-466, 1977.
14. Sarll, D.W. and Holloway, P.J. Safety in dental practice. *Br Dent J* 155:390-391, 1983.
15. Barkmeier, W.W., Cooley, R.L. and Abrams, H. Prevention of swallowing or aspiration of foreign objects. *JADA* 97:473-476, 1978.
16. Grossman, L.I. Prevention in endodontic practise. *JADA* 82:395, 1971.
17. Alexander, R.E. and Delholm, J.J. Rubber dam clamp ingestion, an operative risk: report of case. *JADA* 82:1387, 1971.
18. Fors, V., Berg, J. and Sandberg, H. Microbiological investigation of saliva leakage between the rubber dam and tooth during endodontic treatment. *J Endodon* 12:396, 1986.
19. Reid, J.S., Callis, P.D. and Patterson, C.J.W. *Rubber Dam in Clinical Practice*. Chicago, Quintessence Publishing Co. Ltd., 1991.
20. Richards, A.G. The buccal object rule. *Dent Radiog Photog* 53:37, 1980.
21. Harbert, H.L. and Palombo, S.K., Positioning device for endodontic working radiographs. *J Endodon* 9:86, 1983.
22. Lincoln, R., Manson-Hing. *Fundamentals of dental radiography*. London: Henry Kimpton Publishers, 158-160, 1979.
23. Chee, L.F. and Neo, J. A film-holding device to facilitate endodontic radiography. *Oral Surg, Oral Med, Oral Path* 70(6):780-781, 1990.
24. Walton, R.E. Endodontic radiographic techniques. *Dent Radiog Photog* 46:51, 1973.
25. Liebenberg, W.H. Access — the key to success in complex restorative procedures: a case report. *Dent Assoc S Afr J* 47(12):552-555, 1992.
26. Walton, R.E. and Torabinejad, M. *Principles and practice of endodontics*. Philadelphia, Saunders, 1989.
27. Gerstein, H. *Techniques in clinical endodontics*. Philadelphia, Saunders, 1983.
28. Cunningham, P.R. Control of the operating field. *Dent Clin North Am* 20:329, 1976.
29. Ireland, L. Rubber dam its advantages and application. *Texas Dental J* 80:6, 1962.
30. Simonsen, R.J. Restoration of a fractured central incisor using original tooth fragment. *JADA* 105:646-648, 1982.
31. Liebenberg, W.H. An innovative method for isolation of the working field during bonding of multiple porcelain laminates: a case report. *FDI Dental World*. Accepted for publication in 1993.

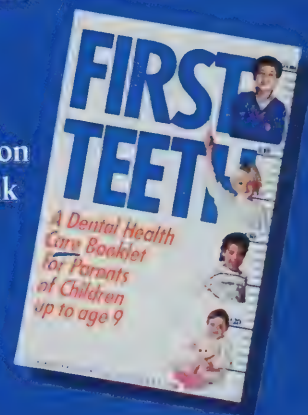


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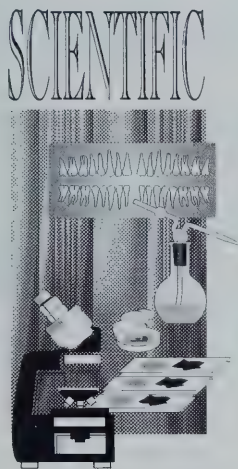
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Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling With the Cavi-Med: A Pilot Investigation

Craig Allison, DDS

Andrew E. Simor, MD, FRCP(C)

David Mock, DDS, PhD, FRCD(C)

Howard C. Tenenbaum, DDS, PhD, FRCD(C)

Toronto

ABSTRACT

The purpose of this pilot investigation was to determine whether the incidence of bacteremia following subgingival ultrasonic scaling and root planing could be reduced by the use, pre- and intra-operatively, of an irrigant containing 0.12 per cent chlorhexidine (CHX); Prosol.

Individuals having evidence of significant periodontal disease (minimum of seven sites per quadrant 4.0 mm and bleeding on probing) were entered into this study.

By use of a random number table, patients were assigned to either the experimental or control groups. The procedures, as described below, were carried out in a double blind fashion so that neither the investigator nor the patient was aware of whether Prosol or placebo was being used. The placebo solution was flavored to make it indistinguishable from Prosol.

Patients were first anesthetized. Their gingival crevices were then irrigated using the Cavi-Med ultra-

sonic scaler. At this point, the ultrasonic action was not activated. Ten minutes later, ultrasonic scaling and root planing with the Cavi-Med unit were begun with a continuous flow of either the placebo or control solutions.

Blood samples were taken pre-operatively, while postoperative samples were taken one minute after completing the scaling of each quadrant and then 10 minutes after scaling the second quadrant. Routine aerobic and anaerobic bacterial culture methods were used to identify viable blood-borne bacteria.

The results show that there was no difference in the distribution or presentation of periodontal disease between the experimental and control quadrants. When the data were analyzed on a quadrant basis, it appeared that the incidence of bacteremia was about 70 per cent in the control quadrants and 30 per cent in the experimental quadrants. This difference was statistically significant ($p < 0.05$). The predominant species of bacteria cultured was *S. viridans*.

These findings suggest that the incidence of bacteremia following subgingival ultrasonic scaling and root planing can be reduced by using an irrigating solution containing 0.12 per cent CHX. The data reported in this pilot study suggest that further investigation of this relatively simple approach is warranted. This may be of benefit to patients who are at risk of developing bacterial endocarditis and suffer from significant periodontal disease.

Key Words

Bacteremia, Chlorhexidine, Ultrasonic Scaling

SOMMAIRE

On a effectué une étude-pilote afin de déterminer si l'on pouvait réduire l'incidence de la bactériémie à la suite d'un détartrage ultrasonique sous-gingival et d'un curetage du ciment radiculaire en utilisant, avant et pendant l'opération, une solution irrigatrice contenant 0,12 p. cent de chlorhexidine (CHX): le Prosol.

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THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anaesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9)(serum creatinine 1.9-5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was a 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients as compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rates due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcers or upper GI bleeding are as follows:

	CUMULATIVE OCCURRENCE	
INTERVAL	KETOROLAC	ASA
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS AND PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with (ketorolac tromethamine). Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L): Toradol is not recommended; **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serumtransaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol IM is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or Less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system:** dysuria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorder** - edema. **Incidence 1% or Less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorder** - Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system** - chest pain, chest pain substernal, migraine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple 30 mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

These reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous System** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence Between 2 and 3%:** **Nervous System** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or Less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paresthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, pain, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half;

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL, or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: 1. Compendium of Pharmaceuticals and Specialties, 27th Edition, 1992. 2. TORADOL Product Monograph, Syntex Inc., Dec. 1992. 3. Lopez M et al. *Pharmacologist* 1987;29:136. 4. Yee JP et al. *Pharmacother* 1986; 6(5):253-61. 5. Brown CR et al. *Pharmacother* 1990; 10(6 Pt 2):455-505. 6. O'Hara DA et al. *Clin Pharm Ther* 1987; 41:556-61. 7. Fragen RJ, Data on File, Syntex Inc., Document CL3837, 1987. 8. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. 9. Stanski DR et al. *Pharmacother* 1990; 10(6 Pt 2):405-445. 10. Data on File, Syntex Inc., Document #90027-1, 1989. 11. Rubin P et al. *Clin Pharmacol Ther* 1987; 41(2):182. 12. Bravo BLJC et al. *Eur J Clin Pharmacol* 1988; 35: 491-4. 13. Stahlgren L, Data on File, Syntex Inc., Document RS-37619, 1991. 14. Greer IA, *Pharmacother* 1990; 10(6 Pt 2):715-765. 15. Spowart K et al. *Thromb Haemost* 1988; 60:382-6. 16. Data on File, Syntex, Document #90027-2, 1989. 17. Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):775-9. 18. Forbes JA et al. *Pharmacother* 1990; 10(6 Pt 2):945-1055. 19. Yee JP et al. Data on File, Syntex Inc., Document CL4855, 1986. 20. Goldblum R and Chen SS. Data on File, Syntex Inc., Document CL5363, 1990. 21. Data on File, Syntex Inc., Document #90027-3, May 1990. 22. Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. 23. Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-341. 24. Cutting CJ, et al. Data on File, Syntex Inc., Document CL4740, 1989. 25. Diebschlag W and Nocker W, Data on File, Syntex Inc., Document CL5468, 1989. 26. Molinier J et al. Data on File, Syntex Inc., Document CL4624, 1988. 27. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. 28. Conrad KA et al. *Clin Pharmacol Ther* 1988; 43:542-6. 29. Harden NR et al. *Headache* 1991;31:463-4. 30. American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain* 3rd edition, 1992. 31. Beaver WT. *Pharmacotherapy* 1990;10(6 Pt 2):295. 32. Doyle DJ. Data on File, Syntex Inc., 1991. 33. Fricke JR et al. *J Clin Pharmacol* 1992;32:376-84. 34. IMS Year in Review 1991, IMS Compustat Data, June 1992. 35. Mangioni C et al. Data on File, Syntex Inc., Document CL4899, 1980. 36. Hutteman W et al. Data on File, Syntex Inc., Document CL4882. 37. Nedelman P et al. Data on File, Syntex Inc., Document CL3635, 1986. 38. Bloomfield S. Data on File, Syntex Inc., Document CL3658, 1986. 39. Sunshine A. Data on File, Syntex Inc., Document CL3674, 1986. 40. Data on File, Syntex Inc., 1992. 41. Rooks WH et al. *Agents and Actions* 1982;12: 684-690. 42. Rooks WH et al. *Drugs under Experimental and Clinical Research* 1985; 11: 479-492. 43. Camu F et al. *9th World Congress of Anesthesiologists, Abstracts Volume 1: Abstract A0167*. 44. Librach SL et al. *The Pain Manual* 1991; 26-30. 45. United Nations International Narcotics Control Board. *Narcotic Drugs* 1990:106, 115 and 118. 46. IMS Canada, August 1992.

Toradol Information Line: 1-800-561-5481.



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The Upjohn Company
of Canada
Don Mills, Ontario

Pour cette étude, on a fait appel à des sujets ayant des problèmes périodontaux importants, c'est-à-dire présentant au moins sept sites affectés par quadrant 4 mm et saignant au sondage.

Numérotés au hasard, ces sujets ont été divisés en deux groupes: un groupe expérimental et un groupe témoin. Comme les procédures décrites ci-après ont été exécutées suivant la méthode à double insu, chercheurs et patients ignoraient s'ils utilisaient le Prosol ou un placebo.

Après avoir anesthésié les sujets, on a irrigué les fissures gingivales à l'aide d'un détartreur ultrasonique Cavi-Med, mais sans ultrasons. Dix minutes plus tard, on a effectué le détartrage et le curetage à ultrasons avec jet continu de la solution irrigatrice: le Prosol ou le placebo.

On a fait des prises de sang avant l'opération, une minute après le détartrage de chaque quadrant et dix minutes après celui du deuxième quadrant. Pour identifier les bactéries viables à diffusion hémotogène, on a eu recours aux méthodes habituelles de culture bactérienne aérobie et anaérobie.

Les résultats n'ont révélé aucune différence quant à la distribution ou à la présentation des maladies périodontales dans les quadrants de l'un et l'autre groupe. Par contre, lorsqu'on a analysé les données recueillies par quadrant, on a découvert que l'incidence de la bactériémie atteignait presque 70 p. cent dans les quadrants du groupe témoin et environ 30 p. cent dans ceux du groupe expérimental. Il s'agit d'une différence importante du point de vue statistique ($p < 0,05$). La bactérie prédominante était le *S. Viridans*.

Ces résultats suggèrent qu'il est possible de réduire l'incidence de la bactériémie à la suite d'un détartrage ultrasonique sous-gingival et d'un curetage du ciment radiculaire en utilisant une solution contenant 0,12 p. cent de CHX. D'après les données recueillies au cours de cette étude, d'autres essais suivant cette méthode relativement simple sembleraient utiles et seraient à l'avantage des patients qui sont susceptibles d'avoir une

endocardite bactérienne et des maladies périodontales importantes.

Introduction

The possibility that transient bacteremia may cause bacterial endocarditis (BE) was first raised nearly 70 years ago.¹ This condition is related to the process of anachoresis, in which blood-borne bacteria seed and infect tissues that are distant from the original site of infection.^{2,3}

There is a marked tendency for such organisms to preferentially infect damaged tissues and prosthetic structures, such as compromised or artificial heart valves.⁴ This may occur in the presence of a periodontal infection, for example, if bacteria from infected pockets enter the vascular system and seed damaged heart valves, leading to BE.

As early as 1926,⁵ it was suggested that *S. viridans*-associated endocarditis developed secondarily to gingivitis or dental abscesses, and the need for good oral hygiene was emphasized. The first patient death due to BE developing after dental extraction was documented in 1930.⁶ Since these early times, many studies have confirmed that all dental procedures have the potential to induce bacteremia.⁷⁻¹⁵

With extraction, the route of bacterial entry into the blood is obviously through the open vascular bed. However, ulcerations and other disruptions in the basement membrane are known to occur commonly in periodontitis.¹⁶ Sites that bleed or suppurate demonstrate numerous areas where ulceration of the pocket epithelium has occurred,¹⁷ providing a portal of entry to the bloodstream. In addition, with the onset of inflammation, there appears to be a loss of the lamina densa of the gingiva as well as a widening of the intercellular spaces.¹⁸ It is conceivable that in the presence of inflammation, bacteria may penetrate through these disruptions of the epithelium into the connective tissues adjacent to the gingival sulcus.^{19,20} After entering the tissue, these organisms could access the bloodstream readily within the well vascularized gingiva.²¹

Traditionally, high-dose systemic antibiotics have been given prior to dental treatment to prevent bacterial endocarditis in patients known to be at risk.²² The rationale for antibiotic usage is to eliminate the bacteria after they have entered the bloodstream. Specifically, antibiotics are thought to be effective in the prevention of BE due to their bactericidal and adherence-inhibiting properties.²³ However, the bacteria known to cause BE, which are found commonly in the gingival crevice, vary widely in their susceptibility to different antibiotics.²⁴⁻²⁷ Further, none of the eight antibiotics tested were effective against all periodontal organisms associated with BE.²⁷

The efficacy of prophylactic antibiotics in the prevention of BE is questionable given the findings of this study. In effect, they show that despite the use of recommended antibiotic prophylaxis protocols, BE can still develop.^{12,22,28-31} In addition, it has been reported that resistant strains of oral streptococci have developed after single and multiple exposures to recommended doses of amoxicillin for prophylaxis.³²⁻³⁴

Moreover, the use of high doses of antibiotics is not without its own risk of morbidity or mortality.^{35,36} Indeed, the risk-benefit ratio for antibiotic prophylaxis using penicillin has been questioned previously.³⁶⁻³⁸ Penicillin prophylaxis may be reasonable for high-risk patients, but the risk-benefit is unfavorable for patients with moderate-, low- and no-risk conditions. In addition, patients who are at risk for the development of BE are often not even identified, and therefore would not be given the recommended antibiotic regimen.³⁹⁻⁴¹ Even when such patients are identified, many do not take the prescribed medication as requested.⁴² Finally, many physicians and dentists do not prescribe appropriate antibiotic regimens for those patients at risk for the development of BE.^{43,44}

In light of the above, it is clear that the use of prophylactic antibiotics to prevent BE is subject to various pitfalls and limitations. Many studies have shown a statistically significant reduction in the

incidence of bacteremia with the application of various topical agents to "degerm" the mouth and gingival sulcus.^{8,9} Therefore, it appears that topically-applied antimicrobial agents may have a place in the armamentarium available against the development of bacteremia, and possibly BE.

Clearly, it would be useful to design methods that would lessen the risks associated with the development of bacteremia in patients receiving dental scaling. Moreover, it would be helpful if such a method could be used routinely for both known high-risk patients and those whose risk factor may as yet be unidentified. To address these problems, a double-blind, randomized clinical trial was designed to determine if the incidence of bacteremia following ultrasonic scaling can be reduced by the application of a protocol where initial and continuous subgingival irrigation with an antimicrobial solution was used in individuals with significant levels of gingival inflammation.

Material and Methods

Patient Selection

Participants were selected from patients who had attended the oral diagnosis department at the University of Toronto and for whom no dental therapy had been initiated. Suitability was determined from the clinical and radiographic information available within each individual's chart.

Prospective patients were contacted by telephone and given a brief description of the project. Interested individuals were sent a letter of explanation and a consent form, and an appointment was scheduled. Patients were offered free half-mouth ultrasonic scaling and an honorarium for participation in the study. All 12 patients asked for the same procedure to be repeated on the opposite side of their mouth for identical remuneration. The study was conducted at the Mount Sinai Hospital Dental Clinic (University of Toronto) from June 1991 to February 1992.

Inclusion Criteria

To enter the study, patients fulfilled the following requirements:

1. Good general health, not requiring antibiotic prophylaxis or treatment;
2. Negative history of antibiotic use for a minimum of three months prior to the study;
3. Negative history of subgingival instrumentation for a minimum of 12 months prior to the study;
4. A minimum of seven sites per quadrant with probing depths of 4.0 mm or more and with bleeding on probing;
5. Abundant plaque and/or calculus;
6. Evidence of attachment and bone loss and;
7. Volunteered for the study after being informed of the procedures involved and the possible complications, and signed the consent form.

Study Design

Randomization and Blindness

The irrigation solution, placebo or Prosol (0.12 per cent Chlorhexidine...CHX) (Dentsply International Inc., York, Pa.) was placed in the Cavi-Med unit (Dentsply International Inc.) by a dental assistant. The use of placebo or Prosol was determined randomly with the aid of a random number table. Prosol was assigned to even numbers and placebo was assigned to odd numbers. The placebo solution was made by mixing together 0.1 mL of essence of peppermint (Fritzche, Dodge and Olcott Canada Ltd., Toronto), 0.2 mL of essence of spearmint (Fritzche, Dodge and Olcott Canada Ltd.), and 250 mL of sterile water (Abbott Laboratories Ltd., Montreal). This simulated the taste and smell of Prosol, maintaining the study's blindness. Further, the patients were requested not to comment about the taste of the solution at any time during the study. All clinical procedures and blood samplings were performed by the same operator, who was trained and experienced in the necessary techniques. Blood samples were processed blindly at a separate laboratory, and the results reported to the investigator.

The Cavi-Med System

The Cavi-Med ultrasonic scaler (Dentsply, Canada) is essentially similar to other ultrasonic scaling

devices, with some notable modifications. An internal cooling system prevents non-sterile tap water from entering the mouth during scaling. In addition, this unit has two reservoirs for storage and delivery of various irrigating solutions. The irrigating solutions are conducted to the very tip of the hollow scaling instrument, thereby ensuring that the fluid is delivered directly to the site where the tip is placed, for example, to the bottom of an infected periodontal pocket.⁴⁵

In view of the above, this instrument has the capacity to deliver an antimicrobial solution to the depth of the patient's periodontal pockets, not only prior to subgingival ultrasonic scaling, but also continuously throughout the procedure.

Clinical Protocol

After the pre-operative blood sample was drawn, topical anesthetic was applied and one carpule of two per cent Xylocaine local anesthetic with 1:100,000 epinephrine (Astra Pharma Inc, Mississauga, Ont.) was injected to block the inferior alveolar nerve and long buccal nerve. A second carpule was also used. Half of this carpule was injected around the posterior superior alveolar nerve and half was infiltrated over the maxillary cuspid.

A periodontal examination was performed and six sites per tooth were recorded. All sites that were 4.0 mm or more and exhibited bleeding on probing were recorded for each quadrant.

Gentle subgingival irrigation was performed by placing the tip of the Cavi-Med into the depth of the pocket and "tracing" the circumference of each tooth sequentially from posterior to anterior, and from the mandibular quadrant to the maxillary quadrant. The irrigation flow was set at the 12 o'clock position, which provided a series of drops from the tip of the instrument.

The patient sat upright for 10 minutes before the scaling of the mandibular quadrant was started. This allowed adequate time for both the bactericidal effect of chlorhexidine gluconate to occur and for clearance of any bacteria introduced by the injection or irri-



TABLE I

Results of Blood Cultures (Numbers within brackets indicate number of sites 4.0 mm or more with bleeding on probing)

Patient Number	Positive Culture					
	Mandibular		Maxillary		Postoperative	
1 Expt Cont			- (11) - (10)		- (10) - (9)	- -
2 Expt Cont	Propionibacterium sp. Peptostreptococci sp.	(11) (10)	S. Viridans	(10)	- (13)	S. Epidermidis -
3 Expt Cont			- (11) - (12)		- (14) - (16)	- -
4 Expt Cont	S. Viridans	(15)	- (12)		- (10)	- -
5 Expt Cont	Nonhemolytic Strep. S. Viridans Microaerophilic gram+ bac.	(17) (16) (16)	S. Viridans Nonhemolytic Strep. S. Anginosus	(18) (24)		- -
6 Expt Cont	S. Viridans Morexella sp. Eikenella sp.	(33) (36)	S. Viridans Bacteroides sp.	(16) (36)		Corynebacterium Eikenella sp.
7 Expt Cont	Fusobacterium sp. anaerobic gram+ cocci	(10) (15)	Corynebacterium Eikenella sp.	(25) (7)		- -
8 Expt Cont	S. Viridans	(11)	- (12) S. Viridans	(10)	- (9)	- S. Viridans
9 Expt Cont	S. Viridans	(12)	- (16) S. Viridans	(9)	- (8)	- -
10 Expt Cont			- (16) - (14)		- (8) - (14)	-
11 Expt Cont	Corynebacterium	(13)	- (24) Fusobacterium	(17)	- (40)	
12 Expt Cont	Pasteurella	(8)	- (14)		- (25) - (10)	-

gation procedures.^{46,47} Scaling was accomplished with the coolant water on maximum and the power intensity setting at the 12 o'clock position.

The second blood sample was secured within one minute of the completion of ultrasonic scaling. The maxillary quadrant was then scaled and the blood sampling procedure repeated. Therefore, a separate post-scaling blood sample was obtained one minute after scaling either quadrant. A final blood sample was taken 10 minutes after scaling was completed.

Culture Methods

At the sampling times indicated above, 15 mL of blood were taken

using a 20 mL luer loc disposable syringe (Monoject Division of Sherwood Medical, St. Louis Mo.) and a 21-gauge butterfly infusion needle (Abbott Ireland Ltd., Sligo, Rep. of Ireland). In all, a total of 60 mL of blood were sampled per patient. Ten mL of blood were injected into a Bactec Plus 26 aerobic culture bottle (Becton and Dickinson Diagnostics, Mississauga, Ont.) and 5.0 mL into a Bactec NR 7A anaerobic culture bottle for each sampling time.

All blood culture isolates were identified using the Bactec non-radiometric technique.^{49,50} In the event of positive growth, the organism(s) was (were) subcultured and identified by standard microbiological methods.⁵¹

Statistical Analysis

All data were tabulated in terms of positive or negative findings. The percentage of patients demonstrating positive cultures was calculated and the difference between control and experimental groups was assessed by three separate statistical methods: 1. Chi-squared analysis; 2. Fishers exact test; and, 3. McNemar's test for correlated proportions – exact test. The use of McNemar's test also permitted a power determination and the calculation of the sample size required for statistical significance (two-tailed test with $p < 0.05$ and power required of 0.80)

TABLE II
Statistical Analysis

		Analysis By Side		Analysis By Quadrant	
Chi-Squared		N.S.		P < 0.009	
Fishers Exact		N.S.		P < 0.020	
McNemars Test		N.S.		P < 0.0039	
Power Determination and Sample Size Calculation					
Experiment Sample 1 (Time 2)		Experiment Sample 2 (Time 3)		Experiment Combined (Time 2 + 3)	
two tailed	p1 = 1.224	two tailed	p1 = 1.047		p1 = 1.918
	p2 = 2.094		p2 = 2.094		p2 = 1.137
	sig level = 0.025		sig level = 0.025		sig level = 0.025
	power required = 0.800		power required = 0.800		power required = 0.800
	equal sample sizes = 12		equal sample sizes = 12		equal sample sizes = 12
Power					
Determination		0.3256	0.2192	0.4870	
Sample Size Required		21	34	25	

Results

Twelve subjects from 31 to 67 years of age, with a mean age of 42.2 years, participated in the study. All patients met the inclusion criteria and completed the study as proposed.

The number of sites per quadrant with a probing depth of 4.0 mm or more and with bleeding on probing (pockets) ranged from seven to 40 pockets, with a mean of 15.5 pockets per quadrant. A similar number of pockets were reported for maxillary (374) and mandibular (368) quadrants. Further, there was no significant difference between the number of pockets per quadrant for experimental and control groups. The time required to scale each quadrant ultrasonically ranged from seven to 18 minutes, with a mean of 12± four minutes.

Incidence of Bacteremia

Nine of the 12 patients (Table I) in the study demonstrated positive blood cultures for the control side, and only three patients had positive blood cultures for the experimental side. An overall incidence of 75 per cent of positive blood cultures were detected. Experimental and control sides had an incidence of bacteremia of 25 per cent and 75

per cent respectively. It should be noted that no positive blood cultures were detected on the experimental side that were not also detected on the control side. There was no correlation between the incidence of positive blood cultures and the number of pockets measured.

The power and sample size determination (Table II) indicated that the power of the study was low if based on half-mouth analysis (about 0.25), and that the sample size required for a statistically-significant result ($p < 0.05$) would require approximately 30 patients, using McNemar's test. However, if the data were analyzed on a quadrant basis, statistical significance was obtained (Table II).

The incidence of positive blood cultures for experimental and control quadrants was 29 per cent and 67 per cent respectively when analyzed in this manner. Further, the power of the study increased to 0.48 and the sample size required for statistical significance decreased to 26 paired quadrants.

Microbiology

Positive cultures were reported as follows:

- One positive culture each of bacteroides sp., moraxella sp., pasteurella sp., peptostreptococcus sp., streptococcus anginosus and staphylococcus epidermidis; and
- Two positive cultures each for propionibacterium sp., non-hemolytic streptococcus and microaerophilic streptococci. Further, there were:
- Three positive cultures of fusobacterium sp.;
- Four positive cultures each of eikenella sp. and corynebacterium sp; and
- 13 positive cultures of viridans streptococci.

Microorganisms were cultured 10 minutes post-scaling on the control side of each patient. A prolonged bacteremia was recorded for the experimental side of one patient (number six) after 10 minutes. Positive findings for the corresponding control side were also shown for patient number six.

Discussion

The results of this pilot study suggest that the initial and continued use of a 0.12 per cent chlorhexidine-containing solution as a

subgingival irrigant for ultrasonic scaling reduces the incidence of bacteremia. Specifically, our findings suggest that there was an overall incidence of bacteremia in 75 per cent of the control group, with only a 25 per cent incidence in the experimental group. In effect, the treatment protocol used in this study reduced the incidence of bacteremia by almost 50 per cent, based on half-mouth analysis. These findings do not appear to have been confounded by sampling artefact, in that all pre-operative blood samples were negative. This is in agreement with most investigators indicating that the blood is normally sterile.⁵²⁻⁵⁴

With regard to the incidence of bacteremia following subgingival scaling with either hand or ultrasonic instruments, it would appear that our data are in general agreement with the findings reported by others. Previous investigations of bacteremia following subgingival scaling using hand instruments have reported an incidence of 8.3 per cent to 83.8 per cent.^{55-58,46} However, only three papers report on bacteremia following ultrasonic scaling.

When the incidence of bacteremia following ultrasonic and hand scaling was compared in 24 patients using a split-mouth design, it was reported that blood cultures were positive in 79.2 per cent of the patients who received ultrasonic scaling and in 66.6 per cent of the patients who underwent hand scaling.⁵⁵ In another study, 61 per cent of patients who did not receive penicillin prophylaxis following ultrasonic scaling demonstrated positive blood cultures five minutes after the procedure, compared to an incidence of only 10.7 per cent among patients who did receive penicillin.⁵⁹ Finally, Ramer et al.⁶⁰ reported a 30 per cent incidence of bacteremia for the CHX experimental and sterile water control sides in patients treated by means of an ultrasonic device identical to the one used in this trial. In Ramer's split-mouth, two-sextant study, pockets of 5.0 mm or more that exhibited bleeding on probing were ultrasonically scaled in 10 patients and irrigated continuously with either 0.12 per cent CHX so-

lution or sterile water. Treatment time for each sextant was 15 minutes. Blood was sampled and assessed by aerobic and anaerobic cultural methods, pre-operatively and postoperatively.

The higher incidence of bacteremia (in relation to the aforementioned studies) in the study reported here (75 per cent) may be accounted for by:

1. More severe gingival inflammation and an increased bacterial load;
2. The greater number of teeth scaled, which enlarged the area of disruption and ulceration and facilitated entry of microorganisms;
3. A larger number of blood samples (four) per patient, increasing the sensitivity of the detection of bacteremia; and
4. Possible differences in blood sampling and microbiological culture techniques that were not reported in detail by Ramer et al.⁶⁰

Nonetheless, the microbiological findings obtained in this clinical trial are consistent with those reported in other studies using a periodontal model.^{29,46,56,58,61}

"Viridans" streptococci were cultured most commonly, accounting for 38 per cent of all positive blood growths. This is important, because viridans streptococci are the microorganisms most frequently associated with BE.^{29,62} The microbiological results support the suggestion that dental manipulations are a major source of bacteremia and implicated in the etiology of BE.¹²

One must be careful not to overinterpret the significance of the data presented. In this regard, the statistical interpretation of the data reported here should be clarified. Although statistically-significant differences between the incidence of bacteremia reported with control and experimental treatment were not observed when patient number was used for "N," it would be imprudent to accept the null hypothesis on this basis alone, and thus imply that the findings are of no clinical importance. Indeed, when the data were analyzed on a quadrant basis, statistical significance was obtained. Since the

quadrants were handled separately, it did not seem to be inappropriate to use quadrants for "N." Numerous papers published in the periodontal literature support this approach and have even used probing sites (six per tooth) or teeth for the calculation of "N."⁶³ Moreover, when the "power" of our study was assessed using the McNemar test, it became apparent that, based on these data, therapy had a profound effect on the incidence of bacteremia. Nonetheless, due to various factors (patients not fulfilling the strict entry criteria, refusal to allow repeated venipuncture, etc.), it was not possible to assemble as large a study population as planned at the outset. Therefore, this investigation must be viewed as a pilot study. In this regard, it seems clear that the data reported here suggest strongly that the use of continuous irrigation with CHX during ultrasonic scaling will reduce the incidence of bacteremia, and these findings provide a sound foundation for further, and more extensive study of a very promising and simple technique. ■

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Dr. Allison is a staff member, faculty of dentistry, University of Toronto.

Dr. Simor is on the staff of the departments of microbiology and internal medicine, Mount Sinai Hospital, Toronto.

Dr. Mock is a faculty member at the University of Toronto, faculty of dentistry, and is on the staff of the pathology department, Mount Sinai Hospital, Toronto.

Dr. Tenenbaum is a staff member at the Samuel Lunenfeld Research Institute and the pathology department of Mount Sinai Hospital, as well as the faculty of dentistry, University of Toronto.

Reprint requests to: **Dr. H.C. Tenenbaum**, Samuel Lunenfeld Research Institute of Mount Sinai Hospital, Rm. 984, 600 University Avenue, Toronto, Ont. M5G 1X5.

References

- Lewis, T. and Grant, R.T. Observations relating to subacute infective endocarditis. *Heart* 10:21-99, 1923.
- Hammil, R.J. Role of fibronectin in infective endocarditis. *Rev Infect Dis* 9(Suppl):S360-371, 1987.
- Sande, M.A. Pathogenesis and pathophysiology. In: *Endocarditis* M.A. Sande, D. Kaye, and R.K. Root (eds). New York, Churchill Livingstone, 1984, pp. 7-28.
- Jawetz, E., Melnick, J. and Adelberg, E. Pyogenic cocci. In: *Review of Medical Microbiology* 16th edition. E. Jawetz, J. Melnick, and E. Adelberg (eds). Los Altos, California, Lange Medical Publications, 1984, pp. 205-207.
- Thayer, W.S. Studies on bacterial (infective) endocarditis. *Johns Hopkins Rep* 22:1-185, 1926.
- Rushton, M.A. Subacute bacterial endocarditis following the extraction of teeth. *Guy's Hosp Rep* 80:39-44, 1930.
- Alexander, J.B. Incidence of bacteremias caused by dental procedures: a review. *Texas Dent J* 94:19-21, 1976.
- Bender, I.B., Naidorf, I.J. and Garvey, G.J. Bacterial endocarditis. A consideration for physician and dentist. *JADA* 109:415-420, 1984.
- Bender, I.B. and Barkin, M.J. Dental bacteremia and its relationship to bacterial endocarditis: preventive measures. *Compend Cont Educ Dent* 10:472-482, 1989.
- Carson, C.C. and Robertson, C.N. Late hematogenous infection of penile prostheses. *J Urol* 139:50-52, 1988.
- Cobe, H.M. Transitory Bacteremia. *Oral Surg* 7:609-615, 1954.
- Durack, D.T., Kaplan, E.L. and Bisno, A.L. Apparent failure of endocarditis prophylaxis. An analysis of 52 cases submitted to the national registry. *JAMA* 250:2318-2322, 1983.
- Guntheroth, W.G. How important are dental procedures as a cause of infective endocarditis? *Am J Cardiol* 54:797-801, 1984.
- Imperiale, T.F. and Horwitz, R.I. Does prophylaxis prevent postdental infective endocarditis? A controlled evaluation of protective efficacy. *Am J Med* 88:131-136, 1990.
- Lineberger, L.T. and DeMarco, T.J. Evaluation of transient bacteremia following routine periodontal procedures. *J Periodont* 44:757-762, 1973.
- Nisengard, R.J. and Peng, T.K. Basement membrane alterations in periodontitis. *J Periodont* 58:331-332, 1987.
- Davenport, R.H., Simpson, D.M. and Hassell, T.M. Histometric comparison of active and inactive lesions of advanced periodontitis. *J Periodont* 53:285-295, 1982.
- Thilander, H. Epithelial changes in gingivitis. *J Periodont Res* 3:303-312, 1968.
- Frank, R.M. Bacterial penetration in the apical pocket mass of advanced human periodontitis. *J Periodont Res* 15:563-573, 1980.
- Saglie, F.R., Newman, M.G., Caranza, F.A., Jr. et al. Bacterial invasion of gingiva in advanced periodontitis in humans. *J Periodont* 53:217-222, 1982.
- Egelberg, J. The blood vessels of the dento-gingival junction. *J Periodont Res* 1:163-167, 1966.
- Dajani, A.S. et al. Prevention of bacterial endocarditis: Recommendations by the American Heart Association. *JAMA* 264:2919-2922, 1990.
- Glauser, M.P., Bernard, J.P., Moreillon, P. et al. Successful single-dose amoxicillin prophylaxis against experimental streptococcal endocarditis: evidence for two mechanisms of protection. *J Infect Dis* 147:568-575, 1983.
- MacFarlane, T.W., Ferguson, M.M. and Mulgrew, C.J. Post extraction bacteremia: Role of antiseptics and antibiotics. *Br Dent J* 156:178-181, 1984.
- Sutter, V.L., Jones, M.J. and Ghoneim, A.T.M. Antimicrobial susceptibilities of bacteria associated with periodontal disease. *Antimicrob Agents Chemother* 23:483-486, 1983.
- Baker, P.J., Evans, R.T., Slots, J. et al. Antibiotic susceptibility of anaerobic bacteria from the human oral cavity. *J Dent Res* 64:1233-1244, 1985.
- Walker, C.B., Pappas, J.D., Tyler, K.Z. et al. Antibiotic susceptibilities of periodontal bacteria. In vitro susceptibilities to eight antimicrobial agents. *J Periodont* 56(Suppl):67-74, 1985.
- Affias, S. et al. Actinobacillus actinomycetemcomitans endocarditis. *CMAJ* 118:1256-1260, 1978.
- Bayliss, R., Clarke, C., Oakly, C. et al. The teeth and infective endocarditis. *Br Heart J* 50:506-512, 1983.
- James, J. et al. Failure of post-bacteremia delayed antibiotic prophylaxis of experimental rabbit endocarditis. *J Antimicrob Chemother* 20:883-885, 1987.
- Grace, C.J. et al. Actinobacillus actinomycetemcomitans prosthetic valve endocarditis. *Rev Infect Dis* 10:922-929, 1988.
- Flemming, P. et al. The development of penicillin-resistant oral streptococci after repeated penicillin prophylaxis. *Oral Surg* 70:440-444, 1990.
- Harrison, G.A.J. et al. Resistance in oral streptococci after repeated three-dose erythromycin prophylaxis. *J Antimicrob Chemother* 15:471-479, 1985.
- Harrison, G.A.J. et al. Resistance in oral streptococci after repetition of a single-dose amoxicillin prophylactic regimen. *J Antimicrob Chemother* 15:501-503, 1985.
- Idsoe, O. et al. Nature and extent of penicillin side-reactions with particular reference to fatalities from anaphylactic shock. *Bull WHO* 38:159-188, 1968.
- Pallasch, T.J. A critical appraisal of antibiotic prophylaxis. *Internat Dent J* 39:183-196, 1989.
- Tzukert, A.A. et al. Analysis of the American Heart Association's recommendations for the prevention of infective endocarditis. *Oral Surg* 62:276-279, 1986a.
- Tzukert, A.A. and Sela, M. Prevention of infective endocarditis: Not by antibiotics alone. *Oral Surg* 62:385-388, 1986b.
- Harvey, W.P. and Capone, M.A. Bacterial endocarditis related to cleaning and filling of teeth with particular reference to the inadequacy of present day knowledge and practice of antibiotic prophylaxis of dental procedures. *Amer J Cardiol* 7:793-801, 1961.
- McGowan, D.A. and Tuohy, O. Dental treatment of patients with valvular heart disease. *Br Dent J* 124:519-520, 1968.
- Bain, R.J.F., Geddes, A.M., Littler, W.A. et al. The clinical and echocardiographic diagnosis of infective endocarditis. *J Antimicrob Chemother* 20(Suppl A):17-24, 1987.
- Greenberg, R.N. Overview of patient compliance with medication: A literature review. *Clin Ther* 6:592-599, 1984.
- Nelson, C.L. and Van Blaricum, C.S. Physician and dentist compliance with AHA guidelines for prevention of bacterial endocarditis. *JADA* 118:169-174, 1989.
- Sadowsky, D. and Kunzel, C. Usual and customary practice versus the recommendations of experts: clinician non-compliance in the prevention of bacterial endocarditis. *JADA* 118:175-180, 1989.
- Nosal, G., Scheidt, M.J., O'Neal, R. et al. The penetration of lavage solution into the periodontal pocket during ultrasonic instrumentation. *J Periodont* 62:554-557, 1991.
- Heimdahl, A. et al. Detection and quantitation by lysis-filtration of bacteremia after different oral surgical procedures. *J Clin Microbiol* 28:2205-2209, 1990.
- Scheld, W.M. Pathogenesis and pathophysiology of infective endocarditis. In: *Endocarditis: Contemporary is-*





sues in infectious disease, Vol. 2. M.A. Sandem, D. Kaye, and R.K. Root (eds.). New York, Churchill Livingstone, 1984, pp. 7-9.

48. Low, D.E. et al. Risk of bacteremia with endoscopic sphincterotomy. *Can J Surg* 30:421-423, 1987a.

49. Low, D.E. et al. Prospective assessment of risk of bacteremia with colonoscopy and polypectomy. *Dig Dis Sci* 32:1239-1243, 1987b.

50. Low, D.E. et al. Bacteremia associated with percutaneous extraction of biliary stones. *J Infect Dis* 159:984-988, 1989.

51. Lenette, E.H., Ballows, A., Hausler, W.J. et al (eds.). *Manual of Clinical Microbiology*. Ed. 4 American Society for Microbiology Washington, D.C., 1985, p. 75.

52. Scopp, I.W. and Orvieto, L.D. Gingival degerming by povidone-iodine irrigation: bacteremia reduction in extraction procedures. *JADA* 83:1294-1296, 1971.

53. Winslow, M.B. and Millstone, S.H. Bacteremia after prophylaxis. *J Periodont* 36:371-374, 1965.

54. Witzemberger, T., O'Leary, T.J. and Gillette, W.B. Effect of a local germicide on the occurrence of bacteremia during subgingival scaling. *J Periodont* 53:172-179, 1982.

55. Bandt, C.L., Korn, N.A. and Schaffer, E.M. Bacteremias from ultrasonic and hand instrumentation. *J Periodont* 35:214-215, 1964.

56. Conner, H.D. et al. Bacteremias following periodontal scaling in patients with healthy appearing gingiva. *J Periodont* 38:466-472, 1967.

57. Korn, K.A. and Schaffer, E.M. A comparison of the postoperative bacteremias induced following different periodontal procedures. *J Periodont* 15:226-231, 1962.

58. Robinson, L. et al. Bacteremias of dental origin II. A study of the factors influencing occurrence and detection. *Oral Surg* 3:923-936, 1950.

59. Baltch, A.L. et al. Bacteremia following dental cleaning in patients with and without penicillin prophylaxis. *Am Heart J* 104:1335-1339, 1982a.

60. Ramer, J.P. et al. Incidence of serum bacteremia following treatment with the Cavi-Med 200 System. *J Dent Res* 70:Special Issue Abstracts #435:320, 1991.

61. Silver, J.G., Martin, A.W. and McBride, B.C. Experimental transient bacteremias in human subjects with varying degrees of plaque accumulation and gingival inflammation. *J Clin Periodont* 4:92-99, 1977.

62. Sande, M.A., Korzeniowski, O.M. and Scheld, W.M. Factors influencing the pathogenesis and prevention of infective endocarditis. *Scand J Infect Dis* 31(Suppl):48-54, 1982.

63. Lofthus, J.E., Waki, M.Y., Jolkovsky, D.L. et al. Bacteremia following subgingival irrigation and scaling and root planing. *J Periodont* 62:602-607, 1991.

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World Focus on Oral Health



The 82nd World Dental Congress will be held between October 2-8, 1994 in Vancouver, Canada. In anticipation of World Health Day, the FDI 1994 Organizing Committee has developed an extensive program emphasizing the theme "World Focus on Oral Health" for your entire dental

team. The World Health Organization (WHO) has declared April 7, 1994 as World Health Day. The objective for this day is to celebrate oral health on a world-wide scale. During the past half century there have been major developments in the oral health profession. The "golden thread" running through all these advances and improvements has been the dental profession as a whole. From the very beginning, the dental team has been actively involved in the quest for improvement.

Take a look at the subsequent page for a sneak preview of what is coming in the FDI 1994 Preliminary Program. The Scientific Program alone is extensive, including several hands-on courses, limited attendance courses and live television presentations in addition to the general scientific lectures. There will also be presentations simultaneously interpreted into the four official languages of the Congress—English, French, German and Spanish, as well as a few simultaneous interpretations into Japanese. And this is just the beginning ...

We must strive to stay abreast of the latest technologies and the newest developments in an ever-changing profession. Let's do this together. Plan now to attend the FDI 1994 Congress and be a part of the world-wide solution in producing optimal oral health.

Michel Jahjah, D.D.S.
General Chairman
1994 Organizing Committee
1815 Alta Vista Drive
Ottawa, Ontario, Canada
K1G 3Y6

Tel: 1-613-523-1770

Fax: 1-613-523-3062

FDI 1994 — Sneak

Social Program

- International Evening
- FDI Scenic Evening Dinner Cruise
- Discover the Orient Evening
- Salmon Barbecue
- FDI Ball

Children's Program

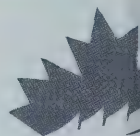
- Vancouver Aquarium & Stanley Park
- Science World & Omnimax Theatre
- North Shore Excursion

Special Activities

- Fun Run & Walk
- Golf Day

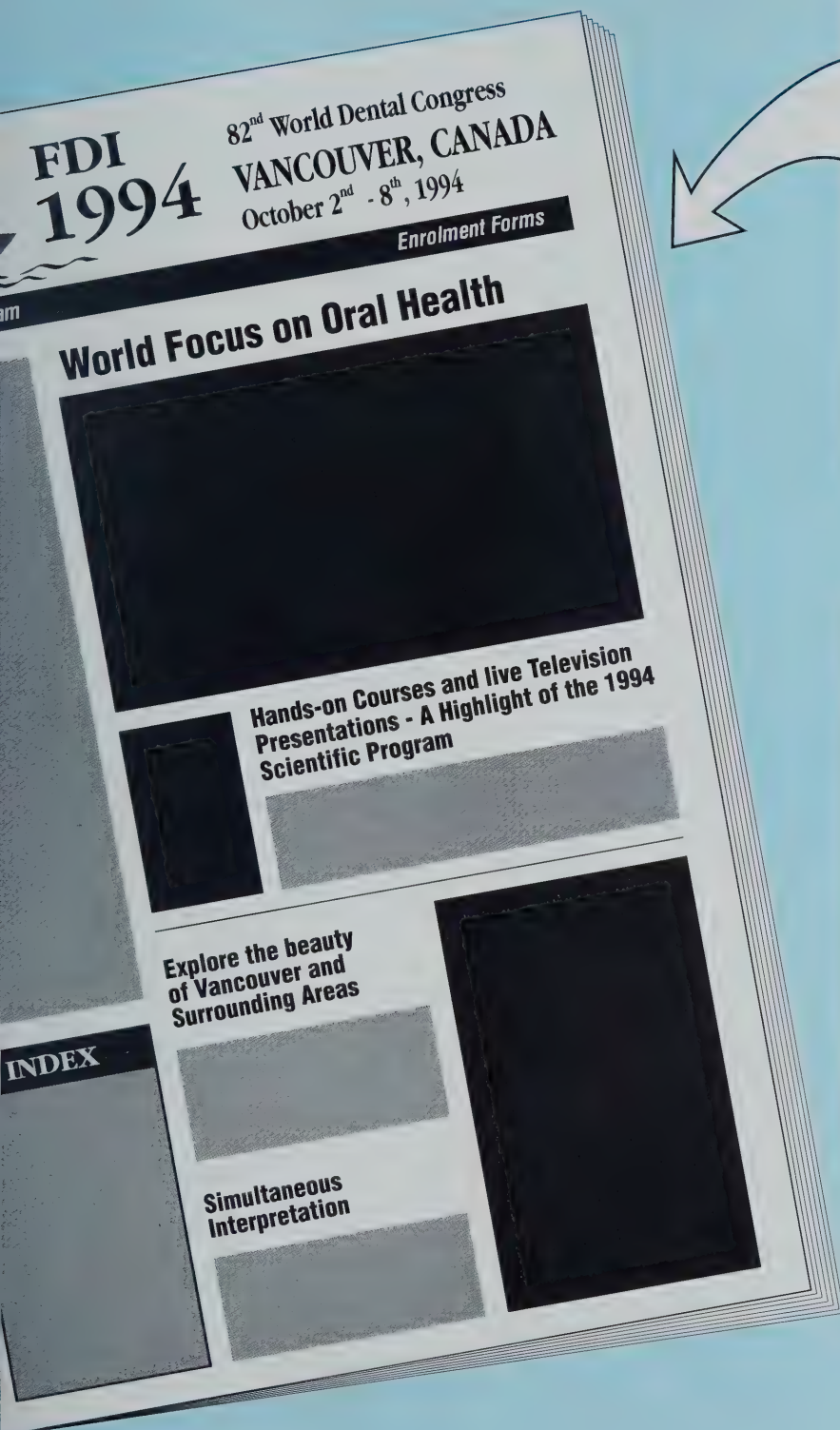
Pre & Post Congress Tours

- Alaska Cruise
- Australia and New Zealand
- Hawaii
- Los Angeles



Preliminary

Preview of the Preliminary Program

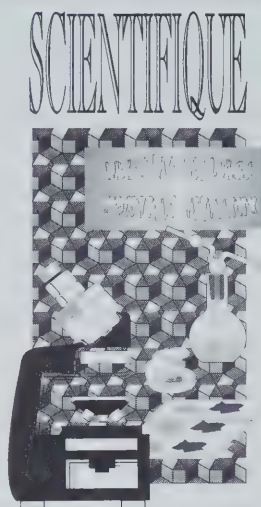


Scientific Program

- Root Planing & Scaling:
Evolution or Revolution?
- Dental Materials for Dental Assistants
- Endodontics for the '90s: Flare, File, Fill
- Periodontics for the '90s and Beyond
- Pain and Fear and the Future of Dentistry
- Infection Control — Has it Gone too Far?
- Fluorides — What's New?
- Total Patient Care in Pediatric Dentistry
- Employee Satisfaction:
What Makes a Great Dental Team
- Dental Hygiene — Recall Redefined

Visits & One-day Tours

- Vancouver City Tour
- Vancouver City Tour
& Granville Island
- Scenic Harbour Cruise
- Salmon Fishing
- North Shore & Grouse Mountain
- Vancouver Aquarium:
Breakfast with the whales
- A day in Victoria
- Royal Hudson Steam Train
& Britannia Excursion
- Whistler Mountain Day Trip



Pathologies buccales d'une population agricole préhistorique du nord-est américain

Gérard Gagné, PhD
Montréal

SOMMAIRE

Les effets de la consommation du sucre raffiné sur le développement des caries dentaires ne sont plus à démontrer. En fait, la production de sucre raffiné et surtout sa grande accessibilité et son adoption généralisée par les populations postindustrielles ont été perçues par les chercheurs comme une révolution alimentaire d'une part et buccopathologique d'autre part.

Les influences néfastes de la consommation de sucre sur le développement de la carie dentaire sont connues de tous grâce aux nombreuses recherches cliniques et épidémiologiques entreprises depuis plus de 40 ans. Quelques auteurs ont aussi démontré cette relation historiquement, au cours des trois derniers siècles.

Il y a cependant eu une autre révolution alimentaire qui a eu une aussi grande influence sur la santé buccale. Il s'agit de l'apparition de l'agriculture. C'est de cette innovation technique et alimentaire que nous voulons discuter dans le présent article. L'agriculture a en effet modifié l'alimentation des populations anciennes en ajoutant des aliments nouveaux (cultigènes ou plantes cultivées), riches en hydrates de carbone, et en modifiant les techniques de cuisson (aliments bouillis plutôt que rôtis). Ces deux apports ont contribué essentiellement à augmenter le nombre de caries dentaires tout en réduisant

l'abrasion des surfaces occlusales des couronnes dentaires.

Nous avons voulu documenter la relation entre la carie dentaire, l'abrasion des surfaces occlusales ainsi que les fractures et les parodontopathies, et la pratique de l'agriculture chez une population amérindienne qui vivait entre 1 000 et 1 500 A.D. dans ce que sont aujourd'hui l'état de New York et les provinces de l'Ontario et du Québec.

Nos résultats confirment ce que plusieurs chercheurs ont noté ailleurs chez les populations d'agriculteurs. Les fréquences de caries dentaires et de parodontopathies sont très élevées, les fractures sont peu nombreuses alors que l'abrasion des surfaces occlusales est modérée pour l'ensemble de la population.

Par ailleurs, la population observée se distingue des autres populations d'agriculteurs connues et analysées à travers le monde en présentant des fréquences de caries dentaires plus élevées. Il est proposé que cette différence soit principalement associée à la technique de cuisson et aux recettes de préparation du maïs.

ABSTRACT

There is no longer any question that the consumption of refined sugar is a factor in the development of dental caries. In fact, researchers now believe that the production of refined sugar and, particularly, its

great availability and use in post-industrial populations has led to a virtual revolution in both the food industry and buccopathology.

Clinical and epidemiological studies on the relationship between caries and sugar consumption have been conducted for more than 40 years, and the harmful effects of sugar consumption on the development of dental caries are now well known. Some authors have also demonstrated a historical relationship between caries and sugar over the last three centuries.

Another food revolution that had an equally great impact on oral health occurred with the introduction of agriculture. This innovation is discussed from both a technical and food perspective.

Agriculture modified the diet of ancient populations by providing new foods that were rich in carbohydrates and by introducing new cooking methods (food was now often boiled instead of being roasted). These two factors alone contributed to an increased rate of dental caries, but at the same time reduced the abrasion of occlusal surfaces and dental crowns.

This paper documents the relationship between dental caries, occlusal abrasion, fractures and periodontal disorders, as well as the agriculture practises of an Amerindian population that lived between 1000 and 1500 A.D. in parts of what are now New York State, Quebec and Ontario.

The author's findings confirm those of many other researchers who have investigated agricultural populations. The incidence of dental caries and periodontal disorders was very high in the Amerindian population group, while fractures were less frequent and occlusal abrasion was moderate. However, this population had a higher incidence of dental caries than other known agricultural populations that have been investigated throughout the world. It is suggested that this difference can be attributed mainly to the methods and recipes used for cooking corn.

Les dents et l'anthropologie

L'anthropologie a pour objet d'étude l'homme et la société, et cherche à comprendre ses comportements et ses transformations à travers le temps, d'un point de vue biologique et culturel. L'analyse de la denture a suscité plus d'un intérêt au sein de la communauté anthropologique. L'examen de caractères morphologiques a permis de tracer l'évolution humaine depuis les tout premiers jalons de l'hominisation ainsi que les affinités biologiques entre les populations anciennes et modernes. À part son importance du point de vue morphologique, l'analyse des dents permet de mieux cerner les relations entre l'alimentation et la santé buccale. De nos jours, il ne fait plus de doute pour personne que l'alimentation tient un rôle prépondérant dans le développement et l'expression de la pathologie buccale. Depuis déjà plusieurs décennies, les médecins dentaires et, plus récemment les nutritionnistes, mettent la population en garde contre les effets cariogènes de la consommation de sucre raffiné. Cette relation a été démontrée à plusieurs reprises alors que les chercheurs Moore et Corbett ont eu le mérite de l'avoir mise en évidence diachroniquement à partir de populations qui ont habité l'Angleterre au cours des deux derniers millénaires. Ils ont notamment clairement démontré les fluctuations des taux de caries dentaires en fonction du coût et de l'accès au sucre au cours des 17^e, 18^e et 19^e siècles.^{1,2,3,4}

Les recherches anthropologiques ont principalement porté sur la relation entre la carie dentaire, l'abrasion des surfaces occlusales et le type de régime alimentaire adopté par les populations humaines au fil des siècles.^{5,6} Elles découlent surtout des connaissances étiologiques acquises par les spécialistes en médecine dentaire. En fait ces connaissances sont une condition *sine qua non* pour toutes recherches portant sur la santé buccale des populations anciennes. Car, contrairement à plusieurs maladies qui ne laissent pas de traces sur le squelette ou, non diagnostiquées lorsque présentes, plusieurs lésions dentaires sont facilement identifiables et leurs étiologies connues. De plus, les dents, de par leur nature essentiellement inorganique, sont très résistantes aux destructions qui peuvent survenir après leur enfouissement (inhumation volontaire ou accidentelle) et par conséquent se conservent bien dans les sites archéologiques ou paléontologiques. Plusieurs souches de vertébrés primitifs sont d'ailleurs représentées par quelques dents seulement.

Les dents constituent donc un matériel d'analyse de premier choix pour les anthropologues et plus particulièrement ceux qui s'intéressent au passé. Elles sont souvent en assez grand nombre dans les collections archéologiques, provenant d'exhumations de cimetières, de sépultures individuelles ou d'ossuaires (fosses communes), pour permettre un examen statistique adéquat. Les lésions sont facilement identifiables de même que leurs causes, ce qui permet de déduire le type d'aliments consommés et même la forme sous laquelle ils ont été consommés. Pour ceux qui s'intéressent aux populations amérindiennes préhistoriques, c'est-à-dire des groupes indigènes qui habitaient l'Amérique avant l'arrivée des Européens, les données archéologiques préhistoriques et les textes narratifs écrits par les missionnaires et explorateurs aux 16^e, 17^e et 18^e siècles permettent une compréhension suffisante des modes de subsistance autochtones qui ont pu influencer leur santé buccale au cours de leur développement. Bien que ces deux approches aient des limites méthodologiques, chacune apporte des résultats qui lui sont

propres. Elles se complètent pour ainsi dire assez bien. L'archéologie permet de reconnaître des traces physiques de l'alimentation (restes de repas sous formes d'ossements) tandis que les documents datant du début de la période du contact permettent de déceler des gestes et coutumes relatifs à l'alimentation (cuisson, dépeçage, recettes).

L'agriculture et la santé buccale

Bien que l'avènement du sucre raffiné peut être considéré comme une révolution dans le domaine de l'alimentation et de la pathologie buccale, sa consommation est toutefois relativement récente dans l'histoire humaine. Une autre révolution alimentaire qui affecta le cours de l'histoire de la carie dentaire, entre autres, a vu le jour il y a près de 12 000 ans au Proche-Orient : l'agriculture. L'apparition de l'agriculture a en effet bouleversé les règles sociales et économiques tout en affectant la santé en général et la santé buccale en particulier. Jadis chasseurs et collecteurs, plusieurs groupes humains sont devenus producteurs de ressources alimentaires. Bon nombre de chercheurs considèrent que cet avènement a eu un impact négatif sur la santé générale des individus, du moins pour les tout premiers agriculteurs. D'autre part, les évidences d'une détérioration de la santé buccale font l'unanimité des scientifiques. La forte concentration d'hydrates de carbone dans les plantes cultivées, comparativement aux plantes sauvages, serait la principale cause d'une augmentation du taux de carie dentaire observée chez les populations agricoles préhistoriques.

En Amérique, tout comme ailleurs, l'adoption de cultigènes (plantes cultivées) ne s'est pas faite au même rythme partout. Le maïs, qui est le principal élément de l'agriculture en ce continent, a été cultivé pour la première fois il y a près de 7 000 ans en Amérique centrale et en Amérique du sud. Plus près de nous, les Iroquoiens, devinrent les premiers agriculteurs, à partir de l'an mille de notre ère environ dans ce que sont aujourd'hui l'État de New-York et les provinces du Québec et de l'Ontario.



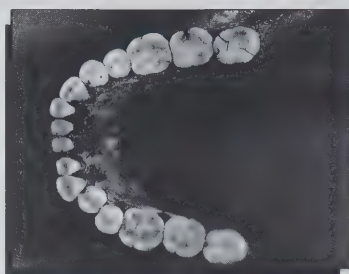


Photo 1 : Mandibule présentant différents degrés d'abrasion des surfaces occlusales. À noter principalement l'exposition de dentine sur les dents antérieures par rapport aux dents postérieures (photo prise par le Dr Robert B.J. Dorion).

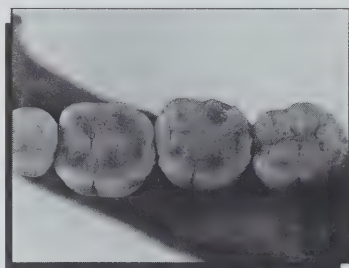


Photo 2 : Vue rapprochée de l'exposition différentielle sur la surface occlusale des molaires (photo prise par le Dr Robert B.J. Dorion).

Cet article porte sur les résultats d'analyse des profils de santé buccale d'un échantillon de cette population iroquoise. Le matériel analysé couvre une période s'étendant entre 1 000 A.D. et 1 500 A.D.

L'approche utilisée

Nous avons analysé, dans le cadre d'une recherche doctorale, près de 500 squelettes provenant de divers sites iroquoiens de l'État de New-York et des provinces de l'Ontario et du Québec.⁷ Plusieurs pathologies ont été notées mais, pour le présent article, les seules à être retenues sont la carie dentaire, l'abcès péri-apical, l'abrasion dentaire, les microfractures, la poche péri-dentaire, la présence de porosité sur le septum interdentaire ainsi que les pertes dentaires durant la vie des individus. Les fréquences des pathologies ont été calculées à partir des observations sur chaque dent ou alvéole. Cette méthode est surtout utilisée par les anthropologues car, contrairement aux cliniciens et aux épidémiologistes modernes, ils doivent travailler sur des squelettes rarement complets à cause notam-

ment des bris survenus après leur enfouissement.

Les échantillons ont été regroupés en quatre catégories en fonction de l'âge des individus et du type de dentures. L'âge à la mort des individus adultes a été déterminé à partir des modifications de la surface de la symphyse pubienne,⁸ du degré de fermeture des sutures exocrâniennes et de la fusion des épiphyses des os longs et de la clavicule.⁹ L'âge des individus immatures a été estimé en tenant compte du degré de calcification des couronnes et des racines ainsi que des séquences d'éruption.¹⁰ Pour les individus de moins de 16 ans, nous avons calculé les fréquences de pathologies buccales pour les dentures temporaires et permanentes séparément. Pour les adultes, c'est-à-dire ceux âgés de plus de 16 ans, nous avons divisé nos effectifs en deux groupes d'âges, soit de 16 ans à 30 ans, et 31 ans et plus. Cette distinction s'avérerait importante à cause du nombre élevé de pertes dentaires durant la vie des individus âgés de plus de 31 ans. De plus, au-delà de 30 ans, les indicateurs d'âge sur le squelette sont moins fiables. Par ailleurs, nous avons distingué deux régions de l'arcade dentaire. La première région inclut les dents antérieures alors que la deuxième regroupe les dents postérieures. Ceci avait pour but de distinguer certaines coutumes culturelles qui affectent principalement les dents antérieures. Nous n'avons cependant pas fait de distinction en-

tre les arcades supérieure et inférieure.

Les lésions buccales retenues font référence à deux conséquences distinctes de l'alimentation sur la santé buccale. Les atteintes infectieuses liées à la consommation de sucre (carie dentaire) et les atteintes mécaniques liées à la consommation d'aliments aux propriétés abrasives (abrasion occlusale, microfracture). Certaines lésions parodontales ont été notées afin de vérifier leur relation avec la carie dentaire et les traumatismes (abrasion occlusale, fracture). Nous avons ainsi relevé la présence d'abcès péri-apical, de poche péri-dentaire, de problèmes péri-dentaires osseux interproximaux et de pertes dentaires durant la vie des individus. L'abrasion des surfaces occlusales a été évaluée à partir des schémas établis par Smith¹¹ concernant l'étendue de l'exposition de dentine (**Fig. 1** et **Photos 1 à 6**).

Le choix de la population à l'étude découle de la quantité et de la diversité de l'information portant sur leurs coutumes alimentaires. De plus, il existe plusieurs rapports d'analyse sur la santé buccale de populations qui ne connaissaient pas l'agriculture et qui peuvent servir de cadre de référence. En simplifiant le continuum alimentaire humain, il y aurait à un pôle, les individus qui consommaient essentiellement de la viande alors qu'à l'autre pôle, il y aurait ceux qui consommaient surtout des plantes.



Photo 3 : Vue buccale des dents antérieures présentant l'abrasion des couronnes dentaires (photo prise par le Dr Robert B.J. Dorion).

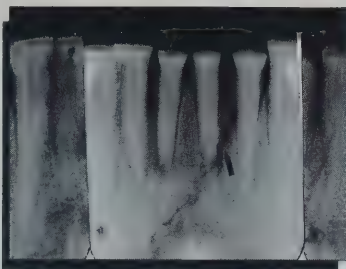


Photo 4 : Radiographie de la mandibule de la photo 3. La flèche indique une fracture post mortem de la mandibule (radiographie prise par le Dr Robert B.J. Dorion).



Photo 5 : Vue buccale des dents postérieures présentant l'abrasion des couronnes dentaires (photo prise par le Dr Robert B.J. Dorion).

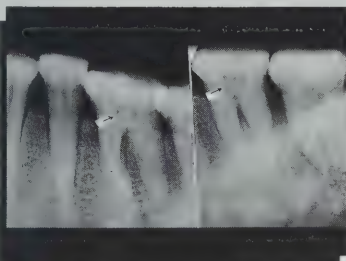


Photo 6 : Radiographie de la mandibule de la photo 5. Les flèches indiquent la différence de dimensions de la chambre pulpaire entre la première et la deuxième molaires (radiographie prise par le Dr Robert B.J. Dorion).

Résultats

La relation entre l'abrasion occlusale et la carie dentaire

De nos jours, à l'exception de cas de bruxisme et d'utilisation de la bouche pour tenir des objets comme le font certains travailleurs spécialisés, l'abrasion dentaire est peu prononcée. Il en était tout autrement chez les populations pré-industrielles. La destruction mécanique des couronnes est une des principales caractéristiques de ces populations (**Photo 7**). Elle varie avec l'âge et il n'est pas rare de rencontrer des individus âgés qui présentent des chambres pulpaires ouvertes par une telle abrasion (**Photo 8**). Plusieurs

Tooth	Molaires inf.		Prémolaires sup. inf.		Incisives sup. inf.	
	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						
7						
8						

Fig. 1 : Classification des degrés d'abrasion des surfaces occlusales (1 à 8; modifié de Smith⁽¹⁾)

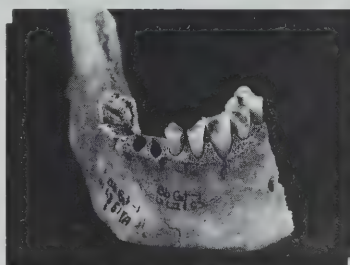


Photo 7 : Vue buccale de dents antérieures. À noter le degré prononcé d'abrasion ainsi que l'angle de destruction des surfaces occlusales.



Photo 8 : Vue buccale de dents postérieures. À noter l'ouverture de la chambre pulpaire suite à une abrasion prononcée sur la première prémolaire. À noter aussi la présence de tartre calcifié au niveau des racines de la première molaire.

sieurs abcès péri-apicaux sont de même formés à la suite d'une trop forte destruction mécanique des surfaces occlusales.

Les techniques de préparation de nourriture sont les grandes responsables de ces destructions coronaires. Les viandes peu cuites et rôties directement sur le feu, la conservation des viandes rouges et blanches selon les techniques de séchage au grand air et les différentes étapes de la préparation des plantes sauvages et cultivées à l'aide d'appareils rudimentaires (i.e. tamis aux ouvertures trop grandes) favorisaient la contamination de particules minérales dans les aliments. Des analyses microscopiques de

pains datant de l'époque pharaonique ont d'ailleurs révélé la présence de fragments de quartz et de d'autres débris minéraux. Plus on remonte dans le temps et plus la contamination devait être importante puisque les plantes cultivées étaient écrasées à l'aide de pierres.

Plusieurs auteurs ont suggéré que l'avènement de l'agriculture au cours de l'histoire humaine a marqué un changement dans l'expression de la carie dentaire et de l'abrasion occlusale. Les plantes cultivées devinrent rapidement l'élément de base du régime alimentaire des populations horticoles. De plus, elles étaient consommées sous forme de soupes et de bouillies, préparées

TABLEAU I
Fréquences des pathologies buccales observées.

		Carie		Abrasion occlusale		Microfracture		Absès		Poche		LOI		Perte ante mortem	
		Nombre	%	Nombre	%	Nombre	%	Nombre	%	Nombre	%	Nombre	%	Nombre	%
0-15 ans (dents temporaires)	dIdC	249	4,82	-	-	248	2,02	241	0,00	241	0,00	-	-	545	0,00
	dM	390	18,46	-	-	390	2,30	383	0,78	381	0,79	-	-	423	0,00
	Total :	1139	7,38	-	-	638	2,19	624	0,48	622	0,48	-	-	968	0,00
0-15 ans (dents permanentes)	IC	111	0,00	106	0,00	109	2,75	104	0,00	103	0,00	52	3,85	233	0,00
	PM	237	10,13	227	0,44	238	0,00	227	0,44	225	0,89	68	17,65	298	0,00
	Total :	348	6,90	333	0,30	347	0,87	331	0,30	328	0,61	120	11,67	531	0,00
16-30 ans	IC	985	3,96	969	41,07	953	7,98	971	2,99	934	0,00	685	33,72	1782	1,46
	PM	1880	24,95	1797	17,86	1839	3,37	1874	3,84	1810	2,10	1601	45,97	2803	11,02
	Total :	2865	17,73	2766	25,10	2792	4,94	2845	3,55	2744	1,39	2286	42,30	4585	7,31
31 ans +	IC	601	17,64	546	91,58	552	5,98	614	8,31	563	0,18	362	55,53	1086	14,73
	PM	730	38,22	636	56,60	695	5,32	740	9,60	395	4,89	533	69,23	1771	42,12
	Total :	1331	28,93	1182	72,76	1247	5,61	1354	9,01	958	3,65	895	63,69	2857	31,71

dl : incisive temporaire
dC : canine temporaire
dM : molaire temporaire
I : incisive permanente

C : canine permanente
P : prémolaire permanente
M : molaire permanente
LOI : lésion osseuse interproximale

dans des vases en terre cuite et, par conséquent, possédaient des propriétés beaucoup moins abrasives que les mets cuits directement sur le feu. Les plantes cultivées, spécialement le maïs pour les autochtones d'Amérique, sont riches en hydrates de carbone et leur consommation a un effet direct sur le développement de la carie dentaire. De nombreuses études anthropologiques ont clairement démontré une fréquence très élevée de caries dentaires chez les groupes horticoles comparativement aux populations qui vivaient de chasse, de pêche et de collecte de plantes sauvages. Une association inverse existe cependant en ce qui concerne l'abrasion des surfaces occlusales. Les populations horticoles qui consommaient en général des aliments bouillis présentent beaucoup moins de destruction de couronne que les populations non horticoles.

Pour certains, une forte abrasion des surfaces occlusales aurait un effet positif sur la prévention de la carie dentaire. En éliminant mécaniquement les sillons et les cuspidés sur les surfaces occlusales, les parti-

cules alimentaires se trouvent ainsi privées de trappes où elles peuvent se loger. Cela semble bien logique mais, comme l'abrasion des surfaces occlusales est un processus dynamique et continu, il faut se demander si l'effet protecteur imaginé par certains est valable tout au long de la vie des individus.

Le **Tableau I** indique une relation inverse entre la carie dentaire et l'abrasion des couronnes dentaires. Cela semble plus évident sur les incisives et les canines que sur les prémolaires et les molaires. Comme la relation entre ces deux pathologies a pu être amenue à cause du regroupement des différents types d'abrasion et de la simple fréquence de la présence ou de l'absence de carie dentaire, nous avons repris nos calculs en considérant cette fois la localisation de la carie dentaire sur la couronne et trois types ou degrés d'abrasion (**Tableau II**).

Chez les individus âgés de moins de 16 ans, l'abrasion occlusale est faible et les caries dentaires se retrouvent principalement sur les surfaces masticatrices. Entre 16 et 30 ans, une abrasion modérée (degrés

4 et 5) et forte (degrés 6, 7 et 8) sont assez fréquentes, et nous notons une relation avec une fréquence élevée de caries dentaires sur les surfaces non occlusales, principalement sur les dents postérieures. Il est aussi à noter qu'à partir de 16 ans, les destructions des couronnes par la carie dentaire sont assez prononcées pour nous empêcher de retracer l'origine des lésions (**Photo 9**). Au-delà de 31 ans, il est évident en observant les résultats que la carie dentaire ne se trouve plus implantée aux mêmes surfaces. L'emplacement de la carie dentaire est à la fois influencé par le degré d'abrasion des surfaces occlusales et le degré de résorption alvéolaire. Une abrasion prononcée élimine les sillons et détruit les cuspidés, tendant ainsi à favoriser la carie dentaire sur les surfaces non occlusales. D'autre part, une forte résorption alvéolaire entraîne un déchaussement des dents et favorise l'implantation de la carie dentaire au niveau de la racine. Finalement, chez les individus qui présentent un faible degré d'abrasion, la carie dentaire s'implante principalement entre les cuspidés, dans les sillons.

TABLEAU II
Localisation de la carie dentaire et évaluation des degrés d'abrasion occlusale.

		Carie dentaire			Abrasion occlusale		
		occlusale	non occlusale	trop détruite	grades 1-2-3	grades 4-5	grades 6-7-8
		pourcentage	pourcentage	pourcentage	pourcentage	pourcentage	pourcentage
0-15 ans	IC	0,00	0,00	0,00	100,00	0,00	0,00
	PM	6,33	3,38	0,42	99,56	0,44	0,00
	Total	4,31	2,30	0,29	99,70	0,30	0,00
16-30 ans	IC	0,10	2,03	1,83	58,93	31,37	9,19
	PM	8,51	8,99	7,45	82,14	14,08	3,67
	Total	5,62	6,60	5,52	74,01	20,14	5,60
31 ans +	IC	0,00	7,99	9,65	8,43	34,25	50,55
	PM	4,52	18,77	14,93	43,40	32,70	23,74
	Total	2,48	13,90	12,55	27,24	33,42	36,13

IC : incisive et canine permanentes

PM : prémolaire et molaire permanentes

Microfractures

Chez les populations horticoles, les fréquences de microfractures sont en général peu élevées.¹² Les techniques de préparation de nourriture utilisées par ces groupes contribuent à une diminution des stress mécaniques imposés à l'appareil masticateur et aux dentures en particulier. Nos résultats le confirment assez clairement (Tableau I). Les dents antérieures possèdent toutefois un bon nombre de microfractures. Elles présentent aussi une abrasion occlusale plus prononcée que les prémolaires et les molaires. La localisation des destructions sur la partie antérieure de l'arcade dentaire pourrait être liée à certaines activités culturelles comme le fait de se servir de la bouche comme d'une troisième main pour tenir les morceaux de viande avant de les couper, pour assouplir les cuirs comme le faisaient les femmes inuit ou pour retenir des fibres végétales lors de la confection d'articles domestiques. Des enquêtes ethnologiques font même état de chasseurs qui affûtaient leurs outils en pierre à l'aide de leurs dents en enlevant par pression de petits éclats.¹³

Tissus de support

La carie dentaire et l'abrasion des surfaces occlusales agissent comme facteurs de stress sur les tissus de support de la dent. L'abcès péri-api-

cal qui est directement lié à l'ouverture de la chambre pulpaire (que l'ouverture soit causée par la carie dentaire ou par une abrasion prononcée), la présence de poche péri-dentaire et de porosité sur le septum interdentaire ont été considérés comme des signes d'inflammation.

Malgré le nombre élevé de caries dentaires, les abcès péri-apicaux et les poches péri-dentaires sont rares (Tableau I). Ces lésions sont surtout présentes chez les individus âgés de plus de 31 ans. Par ailleurs, plusieurs individus possèdent des destructions osseuses interproximales. Plusieurs jeunes individus âgés de moins de 16 ans en sont affectés (11,7 p. cent) alors que près de la moitié de ceux âgés de plus de 16 ans présente une telle modification osseuse. Il semble donc que des agents infectieux aient eu une influence marquée sur l'inflammation des structures osseuses en général même si des lésions plus localisées comme les poches péri-dentaires sont peu nombreuses (Photo 10).

Finalement, il semble que le nombre élevé de caries dentaires soit directement lié au nombre élevé de pertes dentaires durant la vie des individus. Les pourcentages sont à ce point très loquaces. En considérant les dents postérieures des individus âgés de plus de 31 ans, environ 40 p. cent des dents observées sont cariées alors que 40 p. cent des

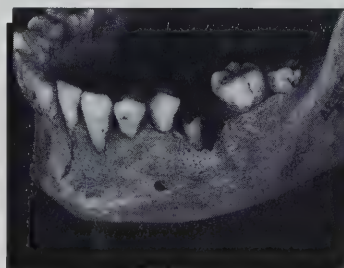


Photo 9 : Vue buccale d'un abcès péri-apical en relation avec une carie dentaire sur la première molaire.



Photo 10 : Vue buccale d'un maxillaire. À noter la présence de réaction osseuse (ostéomyélite) dans le sinus maxillaire. L'inflammation provient d'un abcès au niveau des molaires supérieures.

dents possibles ont chuté durant la vie des individus.

Conclusion

Pour plusieurs, la carie dentaire est un phénomène pathologique historiquement récent. Cette perception n'est pas sans évoquer toute la publicité, depuis les années 1950, mettant en garde la population contre les effets néfastes de la consommation de sucre sur la santé



buccale. Il est vrai que l'apport de sucre raffiné dans l'alimentation a marqué une étape importante dans l'évolution de la carie dentaire. Toutefois, au cours de l'histoire humaine, le passage d'un mode de subsistance basé sur la consommation de viande et de plantes sauvages à celui orienté essentiellement sur la consommation de plantes cultivées, riches en hydrates de carbone, marqua aussi une étape cruciale de la santé buccale des populations pré-industrielles. La nature même des plantes cultivées allait favoriser une augmentation de la carie dentaire alors que de nouvelles techniques de préparation des aliments allaient contribuer à une diminution des stress mécaniques imposés sur les dentures.

La préparation des aliments a changé au fil des ans, marquant une tendance encore bien réelle, vers une diminution des efforts imposés à l'appareil masticateur.

Les maux de dents devaient faire partie intégrante de la vie quotidienne des Iroquoiens et ce, bien avant l'arrivée des Européens et de leur sucre raffiné. En cela, leur réalité devait être bien semblable à celle de nos grands-parents.

**Le terme Iroquoien fait référence à une famille linguistique regroupant plusieurs nations dont les Iroquois, Hurons, Senecas, Neutres, etc.*

Remerciements : Je tiens à remercier très sincèrement le docteur Robert B.J. Dorion qui a certes contribué à enrichir ce texte par ses judicieux commentaires. L'amabilité et l'esprit d'échange de ce chercheur l'ont poussé à nous fournir les photographies 1 à 6 inclusivement.

Malgré la lecture critique du docteur Dorion, nous demeurons seul responsable des idées émises dans cet article.

Gérard Gagné, PhD en anthropologie, professeur au CEGEP de St-Hyacinthe.

Demandes de tirés à part : Gérard Gagné, 5846 rue Duquesne, Montréal (Québec), H1M 2K4

Bibliographie

1. Moore, W.J. et Corbett, E. The Distribution of Dental Caries in Ancient British Populations, I: Anglo-Saxon Period. *Caries Res* 5:151-168, 1971.
2. Moore, W.J. et Corbett, E. The Distribution of Dental Caries in Ancient British Populations, II: Iron Age, Romano-British and Medieval Periods. *Caries Res* 7:139-153, 1973.
3. Moore, W.J. et Corbett, E. Distribution of Dental Caries in Ancient British Populations, III: the 17th Century. *Caries Res* 9:163-175, 1975.
4. Corbett, M.E. et W.J. Moore, Distribution of Dental Caries in Ancient British Populations, IV: the 19th Century. *Caries Res* 10:401-411, 1976.
5. Anderson, J.E. Human Skeleton of Tehuacan. *Science* 148:496-497, 1965.
6. Leigh, R.W. Dental Pathology of Indian Tribes of Varied Environmental and Food Conditions. *Am J of Physical Anthropology* 8:179-199, 1925.
7. Gagne, G. Variations régionales de la pathologie buccale des Iroquoiens du

Sylvicole supérieur, 1991 Thèse de doctorat en anthropologie, Université de Montréal.

8. Todd, T.W. «Age changes in the Pubic Bone: I. The Male White Pubis» *Am J of Physical Anthropology* 3:285-334, 1920.

9. Krogman, W.M. *The Human Skeleton in Forensic Medicine*. 1978, Charles C. Thomas, Springfield, Illinois.

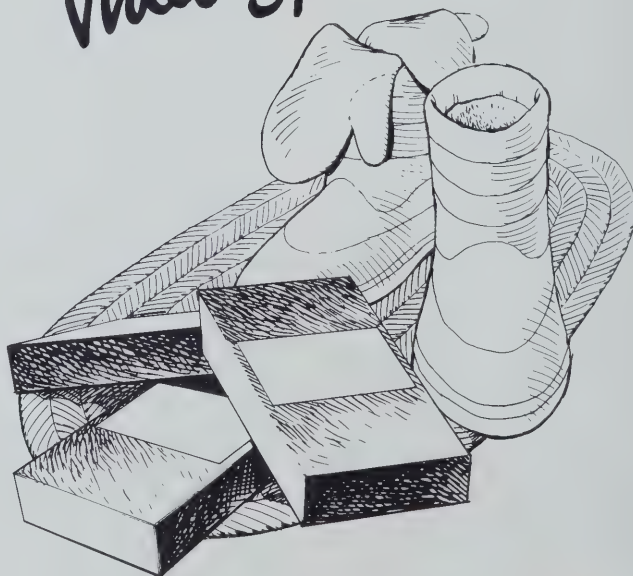
10. Ubelaker, D. *Human Skeletal Remains: Excavation, Analysis, Interpretation*, 1978, Aldine, Chicago.

11. Smith, B.H. Patterns of Molar Wear in Hunter-Gatherers and Agriculturalists. *Am J of Physical Anthropology* 63:39-56, 1984.

12. Patterson, D.K. *A Diachronic Study of Dental Palaeopathology and Attritional Status of Prehistoric Ontario Pre-Iroquois and Iroquois Populations*. 1984 Musée national de l'Homme, coll. Mercure, dossier 122, Ottawa.

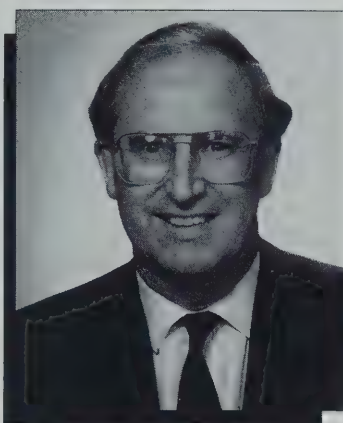
13. Gould, R.A. Chipping Stones in the Outback. *Natural History* 77(2):42-48, 1968.

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The Questionable Relationship Between HIV and AIDS

John Hardie, BDS, M.Sc., FRCD(C)

In April 1993, Drs. Mathias, Marion, and Epstein published an article entitled "The Causation of Disease: HIV and AIDS."¹ Their intent was to critique my paper, "Does HIV Cause AIDS?",² and to promote a number of reasons why HIV is the cause of AIDS.

Analyzing Mathias and colleagues' article, which attempts to show that a temporal relationship exists between HIV and AIDS, was a revealing experience. Although the evidence presented in the paper may appear convincing, I question whether it can withstand close scrutiny. For example, is it possible that screening transfused blood for HIV also removes such pathogens as HBV, CMV, and EBV, which could be as immunosuppressive – if not more so – than HIV? In a similar vein, does heat treating the blood products administered to hemophiliacs also destroy other immunosuppressive pathogens? After all, recent studies with highly-purified monoclonally-prepared clotting factors have restored the immune deficiency of HIV-positive hemophiliacs without such factors having any anti-retroviral effect.³ Do infants with AIDS truly have no other risks apart from maternally-acquired HIV infection, when 80 per cent are born to drug-abusing mothers, 10 per cent have had blood transfusions, six per cent are hemophiliacs, and four per cent may have been sexually abused, malnourished, or have consumed immunosuppressive medication?⁴ Why is it that when such children

are adopted and well cared for, most stay healthy and may even lose their HIV-positive status?^{5,6}

It is assumed by Mathias et al that HIV is sexually transmitted. How is HIV sexually transmitted when semen contains one copy of the virus per million units of sperm, an amount incapable of transmitting disease?⁷ Indeed, the amount of HIV in semen is similar to that excreted from the saliva of an HIV-positive individual, and Dr. Mathias is adamant about oral sex not being a high risk activity. The supposed sexual transmission of HIV does not equate with numerous studies on HIV transmission among female prostitutes, which demonstrate that the greatest risk factor for acquiring HIV among this population group is not promiscuity, but intravenous drug abuse.⁸

The sexual transmission of HIV is inefficient because the amount of free, non-neutralized HIV in semen is so minimal as to be almost non-existent. This was demonstrated by a recent highly-sophisticated study that was capable of detecting one HIV-positive lymphocyte among 100,000 uninfected cells. The investigation found evidence of HIV DNA in the semen lymphocytes of only one of 25 homosexual HIV-positive men.⁹ If HIV is the cause of AIDS and if HIV is sexually transmitted, AIDS should occur in approximately equal proportions among males and females. After a decade of the syndrome, 6,817 Canadian males have been diagnosed with AIDS and only 388 Canadian

females,¹⁰ which is not the normal distribution of a sexually-transmitted disease. Dr. Mathias and his colleagues reference a recent case-control study of Canadian homosexuals¹¹ to prove that HIV causes AIDS. However, the groups in the investigation identified their involvement in risk-associated lifestyle activities, as well as their experiences with related illnesses, via notoriously inaccurate self-administered questionnaires. Furthermore, the duration of "risky" lifestyles experienced by the two groups differed by approximately 50 per cent. Surprisingly for Dr. Mathias and his colleagues, the authors of the study admit that unknown co-factors may play as yet unidentified roles in the pathogenesis of AIDS.¹¹

Although the sexual transmission of HIV must be questioned, there is no doubt that promiscuity among homosexuals is increasing. This is mirrored by a 351 per cent increase in syphilis between 1967 and 1979,^{12,13} an increase in gonorrhea from 259,000 cases in 1960 to over one-million cases in 1980,¹⁴ and the increasing diagnosis of diseases such as amebiasis, shigellosis, and giardiasis among homosexual men. As stated by Grmek in 1990, "American homosexuals created the conditions which, by exceeding a critical threshold, made the epidemic possible."¹⁵ In Canada, the overwhelming majority, i.e. 82 per cent, of AIDS diagnoses have been made in homosexual men.¹⁰

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In the United States, the number of drug arrests increased from 450,000 in 1980 to 1.4 million in 1989.^{16,17} Heroin overdoses in the U.S. quadrupled between 1976 and 1985.¹⁸ The abuse of cocaine experienced a 1,000-fold increase between 1976 and 1985.¹⁸ Requests in Toronto for methadone treatment following heroin addiction tripled from 30 to 109 between 1991 and 1992,¹⁹ while in Vancouver there were 67 deaths from heroin overdose in 1989 and 200 in 1992.¹⁹

AIDS, in North America, is a condition almost exclusively confined to homosexual men and IV drug users. Dr. Mathias and his co-workers accuse me of using dangerous, deceptive, and counterproductive arguments to suggest that it may be more appropriate to direct preventative programs at behavioral risk activities, rather than focusing entirely upon the cessation of HIV transmission. Presumably, they do not consider any of the above facts relevant to the AIDS dilemma.

Approximately 20 years ago, AZT was discontinued as an anti-cancer drug, principally because it induced considerable toxicity to bone marrow cells, followed by anemia and leukopenia.²⁰ It has the same effect on AIDS patients.

After a flawed clinical trial, AZT was officially sanctioned as an anti-AIDS drug in 1987. Its success is highly questionable. Studies have demonstrated that not only do associated diseases worsen, but mortalities ranging from 12 to 72 per cent occur within nine to 18 months of AIDS patients being on AZT.²¹ A 1991 Centers for Disease Control (CDC) investigation revealed a mortality rate of 82 per cent in a cohort of 55 AIDS patients on AZT for up to four years.²² It is a peculiar irony that 10 out of 11 HIV-positive patients on AZT treatment recovered cellular immunity after discontinuing AZT.²³

Kimberly Bergalis had diseases indicative of an immune deficiency before she was diagnosed with AIDS. It is impossible to establish a temporal relationship between HIV and AIDS in her case, which was an inappropriate example for

Mathias et al to use to advance their contention that HIV causes AIDS. In fact, none of their illustrations withstand close inspection. This is not surprising considering the following quotations:²⁴

- "There is not a single scientific publication that purports, either convincingly or unconvincingly, to demonstrate that HIV causes AIDS" – Dr. C. Thomas, the president of Helicon Foundation and a former professor of biological chemistry at Harvard University.
- "I can't find a single virologist who will give me references which show that HIV is the probable cause of AIDS" – Dr. K. Mullis, inventor of the polymerase chain reaction (PCR) test.
- "HIV infection does not necessarily lead to AIDS" – Dr. L. Montagnier, discoverer of HIV.

Dr. Mathias and his colleagues admit that the present definition of AIDS causes confusion. In fact, AIDS should be considered as a collection of 25 previously known but sometimes rare diseases that occur in various combinations, have immune deficiency as a common denominator, and in which HIV may or may not be present. There is concern that current proposals to alter the definition of AIDS – yet again – are politically motivated, particularly as they have no scientific foundation.²⁵ Even CDC admit that rewording the definition will increase the number of AIDS cases reported in 1993 by 80 per cent.²⁶ It now appears as if semantics, rather than medical science, determine an AIDS diagnosis.

Instead of concentrating on HIV, I believe that research should be directed at determining what causes the one phenomenon that all AIDS victims share, i.e. immune deficiency. I suspect that this is a multifactorial problem caused by a variety of factors, including infectious pathogens, injectable and non-injectable drugs, medical therapies, malnutrition, genetic deficiencies and sexual practices. HIV may be one of the pathogens involved or simply a marker of existing immunodeficiency. By insisting that AIDS is caused by HIV and

ignoring the fact that the syndrome is more than likely related to a multitude of synergistic immunosuppressives, health officials are being derelict in their duty to educate and protect the public. There is a need to rethink the cause of AIDS. Over 100 eminent scientists and physicians are already sharing their expertise to accomplish such a goal.²⁷ While I chose to reference only 34 publications in my previous article (Handpiece Sterilization - The Debate Continues, *J Can Dent Assoc* 59(4):355 - 362, 1993), this does not reflect the volume of literature that has been published in this area.

Dr. John Hardie is head of the department of dentistry at Vancouver General Hospital.

References

1. Mathias, R.G., Marion, S.A., Epstein, J.B. The Causation of Disease: HIV and AIDS. *J Canad Dent Assoc* 59(4):351-353, 1993.
2. Hardie, J. Does HIV Cause AIDS? A Review. *J Canad Dent Assoc* 58(9):721-728, 1992.
3. Coleman, J. Blood Poisoning: Act II. *CDC Ideas Transcripts* ID9364, March 18, 1993.
4. CDC. *HIV/AIDS Surveillance*. Year End Report, 1991.
5. Blanche, S., Rouzioux, C., Moscato, M-LG et al. A prospective study of infants born to women seropositive for human immunodeficiency virus type I. *New Engl J Med* 320:1643-1648, 1989.
6. Faber, C. quoting Dr. R. Root-Bernstein in AIDS, Fatal Distraction. *Spin*, June, 1992.
7. Kreiger, J.N., Coombs, R.W., Collier, R.C. et al. Recovery of human immunodeficiency virus type I from semen: Minimal impact of stage of infection and current antiviral chemotherapy. *J Infect Dis* 163:386-388, 1991.
8. Rosenberg, M.J. and Weiner, J.M. Prostitutes and AIDS: A health department priority? *Am J Public Health* 78:418-423, 1988.
9. Van Voorhis, B.J., Martinez, A., Mayer, K. et al. Detection of human immunodeficiency virus type I in semen from seropositive men using culture and polymerase chain reaction deoxyribonucleic acid amplification techniques. *Fertil Steril* 55:588-594, 1991.
10. *Surveillance Update: AIDS in Canada*. HIV/AIDS Div., Bureau of Communicable Disease Epidemiology, LCDC,

Quarterly Report, January 1993.

11. Schecter, M.T., Craib, K.J.P., Gelman, K.A. et al. HIV-I and the etiology of AIDS. *Lancet* 341:658-659, 1993.

12. Larson, A.A. The transmission of venereal disease through homosexual practices. *Can Med Assoc J* 80:22-25, 1959.

13. Fichtner, R.R., Arol, S.O., Bount, J.H. et al. Syphilis in the United States: 1967 - 1979. *Sex Transm Dis* 10:77, 1983.

14. CDC Annual Summary 1980, *MMWR* 30:29, 1981.

15. Grmek, M. *History of AIDS*. Princeton University Press, Princeton, 1990.

16. Shannon, E., Booth, C., Fowler, D. et al. A losing battle. *Time*, Dec. 3, 1990.

17. Bureau of Justice Statistics. *Special Report — Drug Law Violators*. 1980-1986. U.S. Department of Justice, Washington, D.C. 1988.

18. USDHHS (United States Department of Health and Human Services). *Patterns and Trends in Drug Abuse: A National and International Perspective*. Washington, D.C. Division of Epidemiology and Statistical Analysis, National Institute on Drug Abuse, 1985.

19. Brady, D. Cheap and deadly; Heroin usage is up because of a price drop. *Macleans*, April 5, 1993.

20. Hirsch, M.S. and Kaplan, J.C. Antiviral Therapy. *Scientific American* 256:76-85, 1987.

21. Doumon, F., Matheron, S., Rozenbaum, W. et al. Effects of zidovudine in 365 consecutive patients with AIDS or AIDS-related complex. *Lancet* 334:711-721, 1988.

22. CDC. Opportunistic non-Hodgkin's lymphomas among severely immunocompromised HIV-infected patients surviving for prolonged periods on antiretroviral therapy — United States. *MMWR* 40:591-601, 1991.

23. Scolaro, M., Durham, R., Pieczenik, G. Potential molecular competitor for HIV. *Lancet* 337:731-732, 1991.

24. Hodgkinson, N. AIDS — Can We Be Positive? *Sunday Times* (U.K.) April 26, 1992.

25. Eckholm, E. Facts of life. More than inspiration is needed to fight AIDS. *N.Y. Times*, August 1, 1991.

26. CDC. Projections of the Number of Persons Diagnosed with AIDS and the Number of Immunocompromised HIV-Infected Persons — United States, 1992-1994. *MMWR* 41(No RR-18), 1992.

27. The Group for the Scientific Reappraisal of the HIV/AIDS Hypothesis. *Rethinking AIDS* 1(3):2-3, 1993.



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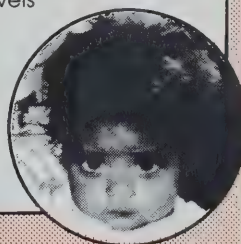
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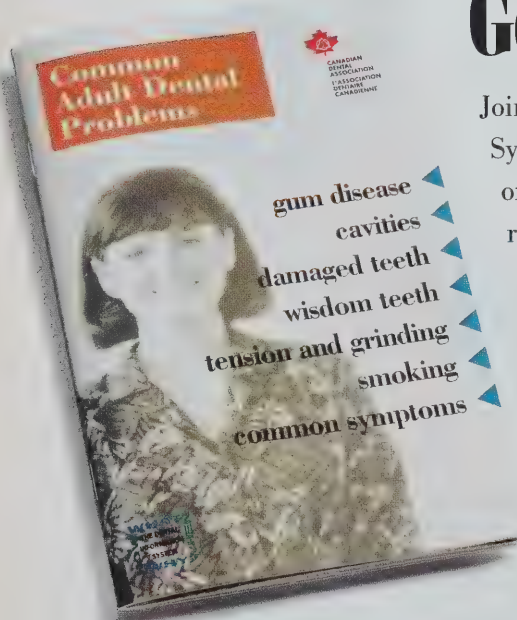
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Aurum Ceramic	646
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CDA DIS	696
CDA First Teeth	672
CDA Leasing	654
CDA RSP	682
CDSPi	662
Colgate	639
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Premier Dental	642
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Wright Dental	640

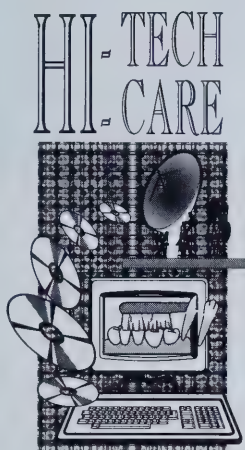
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Computerized Occlusal Analysis

William L. Maness, AB, DDS, MS

Occlusal diagnosis is a complex and often confusing aspect of dentistry that many practitioners either ignore or infer from inadequate information.

Fortunately, however, computerized occlusal analysis has eliminated much of the confusion surrounding occlusal diagnosis. Made possible through the development of the T-Scan system[®], this diagnostic procedure displays tooth contact data immediately and accurately on a video monitor in the dentist's office, and is designed to improve the dentist's understanding of occlusion.

As the patient bites down on a specially-developed disposable proprietary sensor, the timing and force characteristics of his or her occlusion are measured. The sensor is made from two layers of polyester film (Fig 1). Both the top and bottom surfaces of the film are printed with thin conductive strips of silver ink, forming an X-Y grid of 1,500 contact points with a spatial resolution of 1.25 mm and a thickness of 80-100 μ m. The T-scan computer scans the contact points at 100 Hz, allowing the clinician to determine the occlusal contact order.

A force-resistive ink, which is printed on the inner surface of the sensor, can detect up to 16 levels of force discrimination as a result of changes in resistance due to applied force. Timing and force data

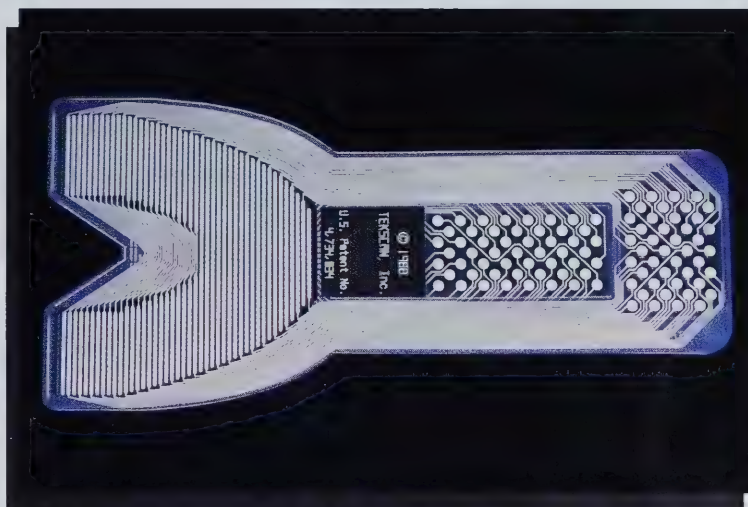


Fig. 1: View of T-Scan sensor showing the columns of conductive silver ink.

are displayed on a video monitor in three-dimensional graphics superimposed on a unique arch-form model that is calculated from the patient's occlusal contact data.

The T-scan personal computer (PC), an IBM compatible handle and board set, gives the dentist full computer capability, including disk storage and hard copy print-out, which allows permanent occlusal records to be kept.

Operating Mode

The T-Scan has two operating modes, the force snapshot and the force movie. A force snapshot is a frozen view of the patient's occlusion showing the distribution and relative force of the tooth contacts (Figs. 2 & 3). Relative force is deter-



Fig. 2: Force snapshot showing a patient with poorly distributed occlusion, with heavy occlusion in the second molar area on the right side.

mined by column height, with the tallest columns showing areas of greatest occlusal force. A force snapshot is extremely useful for diagnostic screening and adjustment procedures.



Fig. 3: Force snapshot showing a more normal occlusion with relatively equal distribution of tooth contacts and force over the posterior teeth.

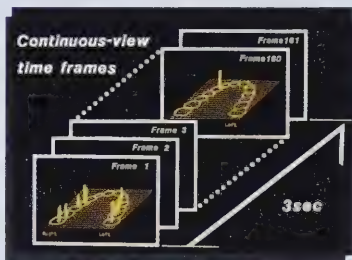


Fig. 4: Diagram of the force movie showing the continuous view time frames.

Similarly, a force movie¹ (Fig. 4) is a dynamic recording of any occlusal closure. It can be replayed in continuous-view time frames, unravelling complex occlusal movements. A force movie can record up to 161 frames of data for three seconds. The first 10 frames have a recording speed of 0.01 seconds per frame and the later frames are recorded at an interval of 0.02 seconds per frame. Only the tooth contacts that occur during a specific frame interval will be displayed in that particular frame (Figs. 5-7).

T-Scan software was developed to allow the dentist to easily understand complex occlusal movements by breaking them down into component parts.

Diagnostic Value

The T-Scan is designed to allow any dentist or auxiliary to rapidly identify the significant aspects of a patient's occlusion. Using a force snapshot, a hygienist or other auxiliary can easily identify factors such as occlusal contact distribution and relative force during an initial screening examination. This

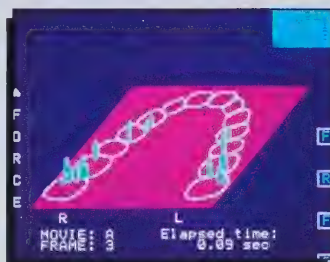


Fig. 5: Force movie sequence showing the maximum intercuspation occlusion in the third frame of the movie with the patient about to make a right working movement.

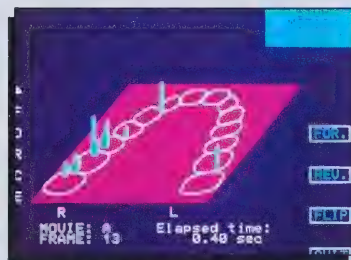


Fig. 6: Force movie frame 13 showing the presence of a nonworking contact in the left molar area and the primary working guidance on the right first molar and cuspid areas.

data may alert the dentist to the possibility of occlusal dysfunction.

If the dentist suspects that the patient needs a more in-depth occlusal analysis, he or she can easily examine the centric relation contacts and excursions to identify working and non-working interferences, which may cause slides and occlusal trauma. He can also quickly document the patient's guidance factors for future reference.

By comparing the relative time and force values during any type of closure, the T-Scan system gives the dentist a new measure for diagnosing potentially destructive tooth contacts. For example, non-working contacts with forces exceeding their working counterparts are generally destructive because they dominate the working excursion. Most dentists understand that non-working contacts often create trauma, but are reluctant to adjust them in the natural dentition. The T-Scan provides a clear, objective rationale for the treatment of this common clinical situation.

Computerized occlusal analysis has great value in all aspects of occlusal diagnosis and treatment,



Fig. 7: Frame 38 showing the completion of the right working movement with cuspid disclusion and minimal force on the second premolar. Note, in all force movie frames, the associated time values.

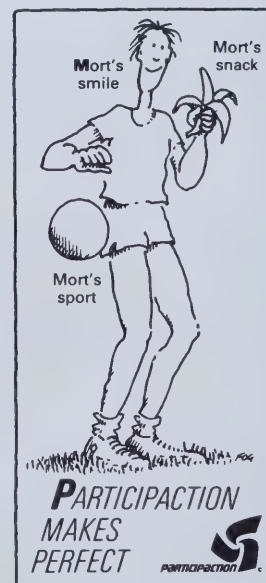
and is especially useful in implant dentistry, where excessive forces can lead to early failure. The graphic images are also useful in patient education.²

The T-Scan PC is designed to be compatible with other IBM compatible diagnostic systems to form the clinical diagnostic work station, already a part of many dental offices.

Dr. Maness is an associate clinical professor at Tufts University School of Dental Medicine and maintains a private practice in Boston, Mass. He is the developer of the T-Scan system.

References

1. Maness, W.L. Force Movie; A time and force view of occlusal contacts. *Compendium* 10:404-408, 1989.
2. Waltz, M.E. The T-Scan system for occlusal registration. *Gen Dent* 39(6):451-454, 1991.



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The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

JOURNAL

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Vol. 59
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Photograph Courtesy of Dr. C. Boyko



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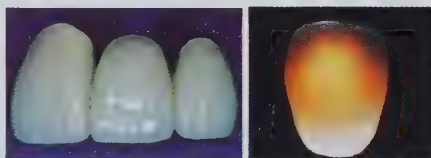
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September/Septembre 1993
Vol. 59, No. 9

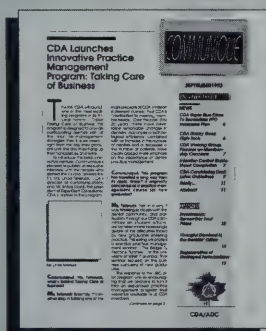
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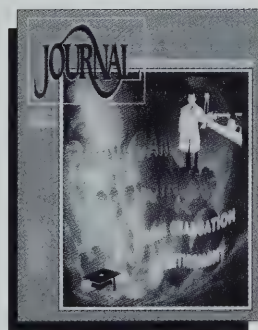
- 739** Meet The Wenns From P.E.I. —
A True Dental Family!
P.R. Crawford, BA, DMD

Scientific

- 749** Fractures of the Zygomatic Complex:
A Case Report And Review
Tim Sands, DDS
Owen Symington, B.Sc., M.Sc., DDS
Nick Katsikeris, DDS, Dr. Dent. et al.
- 759** Pediatric Mandibular Fractures Treated By
Rigid Internal Fixation
Gordon B. Wong, M.Sc., DDS
- 765** Clinical Observations On A Newly Designed
Electronic Apex Locator
W.H. Christie, DMD, MS, FRCD(C)
M.D. Peikoff, DMD, M.Sc.D., FRCD(C)
C.E. Hawrish, BA, DDS, M.Sc., MRCD(C)
- 774** Étude comparative du diamètre des pointes
d'explorateurs dentaires et l'effet de l'usure
sur le diamètre
Haig Baltadjian, DDS, MSD
Hélène Labrèche
Yves Lepage, PhD et al.

Departments

- 710** Letters to the Editor
- 712** Announcements
- 715** Editorial
- 717** News Update
- 723** CDSPI Reports
- 728** Book Reviews
- 730** Library
- 733** Practice Management
& Success
- 736** CDA Dental Meeting
- 779** CDA Access Ads
- 784** Advertisers' Index
- 785** Dental Students' Forum



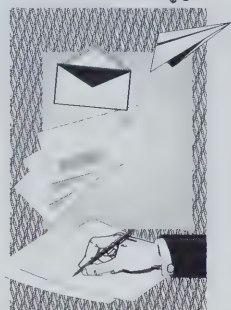
Cover: From School To Prac-
tice. (Illustration By Louise
Després Jones)

JOURNAL

Septembre/
September
1993
Vol. 59
No. 9

LETTERS

LETTERS



U.S. Board Exams

I am writing in support of the comments Dr. J.T. Jastak made in his *It's My Opinion* column last May (Dental Education and Board Examinations in the U.S. *J Can Dent Assoc* 59(5):484-486, 1993).

As a Canadian teaching at an American university, I see the board examinations that transpire each year. In response to the annual question, "What do they do in Canada," I have always been able to answer, with pride, that Canada progressed many years ago past the situation that is still prevalent in the U.S.A., recognizing that the whole point of an accreditation system is to ensure proper outcomes by ensuring a proper process.

I agree with Dr. Jastak that the Canadian system is the envy of many educators and practitioners in the United States. I hope that Canada does not revert to the situation found in the U.S. There is no proof that these board examinations serve any public good, and certainly there is anecdotal evidence to suggest that they harm competent young graduates. I shall not even comment on their effect on patients. When I try to explain the system prevalent in dentistry to my medical colleagues, they are unable to grasp the point of the process. Of course, neither am I!

A. Ruprecht, DDS, M.Sc.D.,
FRCD(C)

Professor of Radiology
University of Iowa

Socialized Dentistry

Dr. Jack Niedermayer's article in the June 1993 issue on socialized dentistry for children in Saskatchewan was interesting, especially with respect to placing dates on events in the plan from its inception to its demise (Socialized Dentistry for Children in Saskatchewan: It's beginning — 1974. It's demise — 1993. *J Can Dent Assoc* 59(6):522-527, 1993).

Certainly the Saskatchewan model was the flagship of dental public health in Canada and perhaps the world. It demonstrated how remote populations could be reached with dental treatment, how staff (i.e. the dental nurse) need only be educated to the level required and how inadequate dental health may be reversed.

What was missing from the article were dental health indicators and their changes with the events. Before the school-based dental program was dismantled in 1987, I received annual reports of the plan that precisely indicated utilization rates and the DMFT of students. After the program shifted to the private sector, I did not see this data nor am I aware that it was produced. Now that the program has been totally dismantled, it would be interesting to monitor the effect of its demise on the children's dental health. Hopefully, this is being done.

Certainly, data like this is important to a wider audience than "public health types" like myself. Today, perhaps more than ever before, decisions in all sectors — including the health care sector — are based on demographics and statistical data. Who has the disease? How widespread is it? Can the patterns be reversed? What are the costs to realize this?

The denticare plans in British Columbia, Saskatchewan, Manitoba and Newfoundland have been eliminated or modified. Where does dental health fit into the overall health picture? Only by having the data can dental programs, either publicly or privately oper-

ated, be justified and fit into their proper place.

Neil A. Farrel, DDS, DDPH
Middlesex-London Health Unit
London, Ontario

HIV/AIDS, Quirks and Quarks

Recently, a spokesman for the Canadian Dental Association presented views concerning HIV, AIDS, and the question of the transmission of the disease via dental instruments that are so grossly uninformed as to be dangerous, if taken to heart by practitioners. They demand a reply.

The program was the science series "Quirks and Quarks," heard on radio station KALW-FM, San Francisco, as a rebroadcast of an earlier taping. In the program, Dr. John Hardie, repeatedly identified as a spokesman for the Canadian Dental Association, ridiculed the possibility that AIDS could be transmitted by the mechanism of dental equipment, likening this potential to the danger of contracting a disease in a dentist's waiting room. He seemed to feel that attention to the danger was politically motivated, another word he used, and stated that there was uncertainty that HIV was, in fact, the cause of AIDS, and that there were several other hypotheses. He felt that since dental handpieces had been used for 45 years and had not caused a widely-recognized transmission of hepatitis, they therefore were not a significant vessel for the passage of diseases including HIV.

At the conclusion of the program, the announcer noted that Dr. Hardie was no longer a spokesman for infectious disease matters on behalf of the Canadian Dental Association. However, his unfounded assertions cannot go unchallenged by health professionals in either dentistry or medicine, or on either side of our common international border. The transmission of the HIV virus to an uninfected person is tragic in every case. If, as has been shown, that transmission can be effected by particulate matter

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

which was not sterilized because of the absence of the heat treatment of dental handpieces, then the next logical step seems clear. It is difficult to understand how the Canadian Dental Association, for which one otherwise has great respect, could permit, let alone endorse, Dr. Hardie's dangerous ideas.

Grant E. Gauger, MD
University of California Hospital
San Francisco, California

Dr. Hardie's Response

According to Dr. Gauger, I am dangerous and uninformed because I questioned the HIV causes AIDS hypothesis and the need to sterilize dental handpieces. Perhaps, it would have been prudent for Dr. Gauger to have acquired further information prior to passing his judgment.

Contrary to his statement, it has not been demonstrated that HIV is transmitted via a dental handpiece, nor has the effectiveness of sterilization in preventing such a theoretical route of infection been assessed. There is no evidence that as an obligate intracellular parasite, HIV is capable of adhering to and multiplying within CD4-T lymphocytes which might survive inside a handpiece. Indeed, if free, viable HIV could be expelled from a handpiece, its pathogenicity is in doubt because it does not adhere to oral mucosa, and it would be destroyed by gastric secretions secondary to swallowing or be removed by high-speed suction.

Does Dr. Gauger know that a recent study has eliminated dental equipment as a vector for HIV transmission in Dr. David Acer's Florida practice. Is he aware that epidemiologic investigations have identified acutely-infected practitioners and patients — and not dental instruments — as the source of hepatitis B transmission in dental practice? Surely his reading of scientific literature has included details on the syphilis-AIDS hypothesis, the swine fever hypothesis, the co-factor hypothesis, the multiple antigen-mediated autoimmunity hypothesis, the risks-AIDS hypothesis, and the multifactorial synergistic hypothesis. Is he prepared to ignore the many eminent re-

searchers and clinicians who are asking for a reassessment of the "HIV causes AIDS" hypothesis? Does he understand that dentistry usually involves minimally invasive procedures performed on healthy, non-susceptible ambulatory patients, and that Health and Welfare Canada has accepted that protection from blood-borne pathogens should consider the specific activities of the health care provider?

It is my contention that, by failing to consider all these facts, Dr. Gauger has posed no challenge to my opinions. On the contrary, he manifests a malady sadly common in this era of AIDS — a remarkable ability to be politically correct while ignoring the enlightening sense of curiosity that has so enhanced our respective professions.

J. Hardie, BDS, M.Sc. FRCD(C)
Vancouver, B.C.

Editor's Note

Currently, Dr. Bernard Dolansky, the president of CDA, is the Canadian Dental Association's spokesperson on infection control. CDA does not endorse Dr. John Hardie's positions on AIDS and HIV. The Journal has, however, published articles by Dr. Hardie in the interest of promoting scientific debate. CDA's official position on infection control is a matter of record, and can be found in the association's Recommendations For Infection Control Procedures. In addition, CDA's board of governors is expected to give its final approval to an Infection Control Guide this month.

CONTINUING EDUCATION 1993-1994

UNIVERSITY OF MANITOBA

Oct. 23, 1993: Recent Advances in Diagnostic and Surgical Sciences

Dec. 4, 1993: Focus on the Future of Cosmetic Dentistry (Alpha Omega Memorial Lecture)

Feb. 11, 1994: Endodontic Problem Solving in the '90s

March 4-5, 1994: Level II Complexity Basic Molar Root Canal Therapy (Lecture and Laboratory)

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Dec. 10: Surgical Endodontics

Jan. 28, 1994: Easier Endo - Gadgets I Like and Ideas I've Stolen

Feb. 25, 1994: Symposium: Management of the Endodontically Compromised Tooth

March 24, March 25: Participation Course in Molar Endodontics

April 26, 1994: Emergency Procedures in the Dental Practice

May 6, 1994: Participation Course in Root Canal Filling using the "Warm Gutta Percha Technique"

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JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

May 12-14, 1994
Newfoundland Dental Association Annual Convention
 (709) 579-2362

October 2-8, 1994
Joint CDA/FDI Annual Dental Meeting
 Vancouver, B.C.
 (613) 523-1770,
 or 1-800-267-6354

October/Octobre 1993

October 1-2: 12ème Symposium International de Céramique in Paris, France. The 12th Symposium is being sponsored by Quintessence Publishing (Germany, U.S.A.) and Groupe CdP (France). For information and registration, contact: Groupe CdP, 77 rue de Richelieu, 75002 Paris.

October 1-3: Canadian Association of Dental Consultants Annual Workshop at the Sheraton Halifax in Halifax, Nova Scotia. For more information, contact: Dr. William O. Adams, P.O. Box 2200, Halifax, Nova Scotia B3J 3C6. Tel: (902) 468-9700, ext. 194.

October 1-3: University of Alberta Annual Reunion Weekend. For information regarding who is organizing your class reunion, phone the Alumni Office at (403) 492-0117.

October 15-16: 1993 CFDE/CDA Teaching Conference on Hospital Dentistry in Toronto. To register, contact: Ms. Gay MacQuarrie at (613) 523-1770 or write the CDA, 1815 Alta Vista Dr., Ottawa, Ontario K1G 3Y6.

October 22-23: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ontario. For details, contact: Dr. Jeff Berger, Tel: (519) 258-2632, or fax: (519) 258-2637.

October 29-30: The Canadian Academy of Restorative Dentistry and Prosthodontics at the Halifax Sheraton Hotel in Halifax, Nova Scotia. For information or registra-

tion contact: Dr. Michael Roda, 1545 Birmingham St., Halifax, Nova Scotia B3J 2J6. Tel: (902) 422-5957, fax: (902) 492-4426.

November/Novembre 1993

November 2-4: American Academy of Gold Foil Operators in Portland, Oregon. For details, contact: Secretary-Treasurer Dr. Ronald K. Harris, 17922 Tallgrass Court, Noblesville, Indiana 46060, or call: (317) 867-0414.

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry in San Francisco, Cal. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

January/Janvier 1994

January 7-9: Academy of Dentistry International, in collaboration with the Vietnamese Odonto-Stomatological Association will host the 1st International Dental Congress and Expodent 1994 in Ho Chi Minh City, Vietnam. For details, contact: Pac-West (S) DTE Ltd. 1 Selegie Road, 04-05 Paradiz Centre, Singapore 0718, Republic of Singapore.

January 20-23: 19th Yankee Dental Congress (Massachusetts Dental Society) at Boston's Hynes Convention Center. For information, contact: Dr. Ann Kirk, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Massachusetts 01760-4125. Tel: (508) 651-7511.

February/Février 1994

February 3-5: 2nd Catalan Congress on Odontostomatology/Dentalmat 94 at the Palacio de Congresos de Barcelona in Spain. For details, contact: The Official Association of Odontologist and Stomatologist of

Catalina, Central Office, Via Laetana, 30, 4°F, 08003, Barcelona, Spain.

February 16-20: Jamaica Dental Association 30th National Dental Convention at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

March/Mars 1994

March 3-5: Academy of Osseointegration Ninth Annual Meeting in Orlando, Florida. For information, contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Illinois 60611-4267.

April/Avril 1994

April 27-May 1: 51st Annual Session of the American Association of Endodontists (AAE) at the Hilton Hawaiian Village in Honolulu, Hawaii. To register, contact: American Association of Endodontists, Annual Session Registration, 211 E. Chicago Avenue, Chicago, Illinois 60611-2691. Tel: (312) 266-7255.

June/Juin 1994

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046. La Habana, Cuba.

June 20-25: Expodental 94 - Turkish Dental Association Second International Dental Congress in Istanbul, Turkey. For information, contact: Istanbul Chamber of Dentists, Mesrutiyet Cad. 182/7 Sishane, Istanbul, Turkey.

June 25-July 1: 10th Congress of the International Association of Dento-Maxillo-Facial Radiology in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMFR, c/o Korea Convention Services Ltd. SL Youngdong PO Box 305, Seoul 135-603, Korea.

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September/
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 Vol. 59
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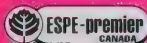
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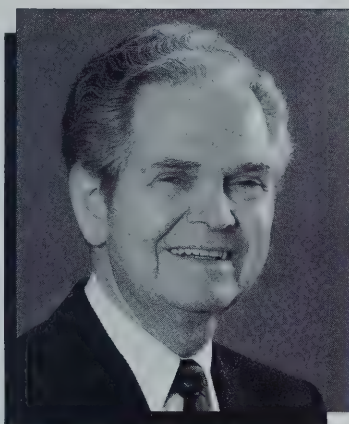


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EDITORIAL

Management Of A Dental Practice



Dr. P. Ralph Crawford,
Editor

If a new graduate, fresh from college halls, asked me to describe a plan for successful dental practice, my answer, based on my experience, might be this:

"From time to time, as years go by, your practice will reach certain stages that will require modifications in your methods. Consideration needs to be given to the office and equipment, establishment of regular hours, the employment of an assistant, the engagement of an associate and the problem of fees."

But if the new graduate followed my advice, I could take little credit for their future success. In fact, the title and the second paragraph of my editorial really belong to Dr. Edmund C. Kells. He used them 100 years ago, in a paper read to the New Orleans Odontological Society on April 12, 1893. (For a short biography of Dr. Kells (1856-1928), one of the world's most inventive dental geniuses, see page 718 of the *Journal*.)

I quoted Dr. Kells' 100 year-old paper to emphasize that practice management is not a new phenomenon. And that no practice management strategy should put the dentist's welfare above that of the patient. Certainly Dr. Kells would agree. His work to perfect

dental X-rays ultimately cost him his fingers, his hand, his arm and then his life.

This fall, CDA is pioneering one of its most innovative member services, *Taking Care of Business*. Developed jointly by CDA and ExperDent Consultants, this three-part practice management program covers everything that a dentist — young or old — needs to know about running a dental practice. The message hasn't changed in a 100 years. Good management and good patient care go hand in hand. Although practice management has been around for more than a century, its complexity has become more and more challenging. In one generation, Canada saw its complement of dental schools grow from five to 10, and simultaneously initiated wide-ranging fluoride programs. What we effectively accomplished within a few short years was to double the supply of dentists and half the demand for dental services at one and the same time. To this we added enhanced preventive programs and technological changes that not only made the delivery of dentistry easier, but also made it more acceptable to the public.

Now, as if all this doubling, cutting in half, and prevention wasn't enough, we threw in dental insurance, computers, infection control and a recession. It sounds like a dental practice management nightmare, and it could be, but *Taking Care of Business* has come to the rescue.

CDA, as our mission statement makes clear, is dedicated to meeting members needs, and the promotion and provision of optimal oral health for Canadians. In recent years, the association has become increasingly aware of the start-up difficulties being experienced by new and recent graduates. We've also noted a decline in the overall demand for dental services, which has affected even the most veteran of practitioners. Something needed to be done.

Last fall, CDA took the bull by the horns. CDA's director of communications, Ms. Linda Teteruck,

approached Mr. Imtiaz Manji, the president of ExperDent Consultants, to discuss ways and means of developing a top-flight practice management program for new graduates. Mr. Manji, well known to *Journal* readers through his popular monthly column, "Practice Management and Success," quickly agreed that a program was necessary and offered his services to the cause.

This meeting of wills gave birth to an all day seminar, *The New Graduate Program — Bridge to Practice Success*, which was piloted to senior dental students at the University of British Columbia last April. An anonymous survey, taken at the conclusion of the B.C. seminar, was so positive that Ms. Teteruck and Mr. Manji believed the program should be expanded. As a first step, they felt that the seminar series should be offered to all 10 dental schools. But in addition, a similar program should be made available to all dentists, from recent graduates to veterans. Both projects are on their way.

The two programs will be ready for release this fall. The Association of Canadian Faculties of Dentistry has already extended an invitation to CDA to present our *New Graduate Program* in each of the country's 10 dental schools, and work to complete *Taking Care of Business* is in its final stages.

Recently, the first of *Taking Care of Business's* three volumes was sent to a dozen well-known practitioners for comment. Their responses were more than encouraging — they were overwhelming. One recent graduate actually went so far as to say: "One could literally take this document and plan one's life with it!"

A preview of *Taking Care of Business* can be found in Imtiaz Manji's column on page 733. Additional excerpts will be published in future issues of *Communiqué*. Watch for them.

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

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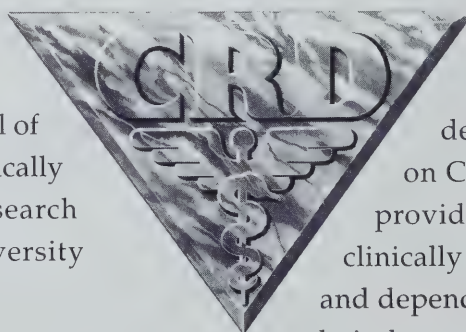
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NEWS UPDATE

Board of Governors To Elect New Officers



*Dr. James Brookfield,
CDA's new vice-president*

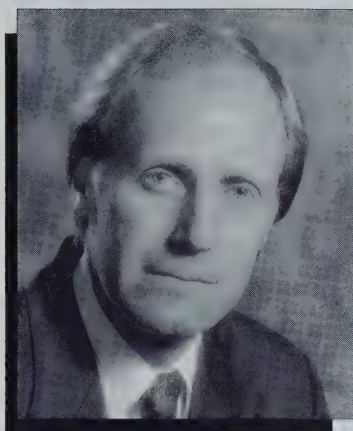
Dr. James Brookfield of Kirkland Lake, Ontario, is likely to be acclaimed as CDA's new vice-president September 10, when the association holds its 1993 annual board of governors' meeting in Ottawa.

The board will also install Dr. Raymond Wenn of Charlottetown, P.E.I., as president of the association for the 1993-94 term (see story on page 739), along with Dr. Bryun Sigfstead as president-elect.

Dr. Sigfstead, an orthodontist from Edmonton, Alberta, served on CDA's management committee as vice-president during the 1992-93 term. A past-president of the Alberta Dental Association (1984-85), he received his DDS from the University of Alberta in 1967 and his diploma in orthodontics in 1973. Dr. Sigfstead has been a member of the CDA board of governors and executive council since 1987.

Dr. Brookfield received his DDS from the University of Toronto in 1971 and established a general practice in Kirkland Lake following graduation. He was president of the Ontario Dental Association in 1987-88, and first served as a CDA governor in 1985. He has been a member of the CDA executive council for the past three years.

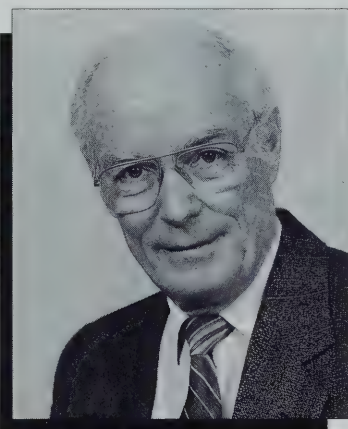
If he is named vice-president — he is expected to win the election by acclamation — Dr. Brookfield will



*Dr. Bryun Sigfstead,
president-elect*

serve on CDA's management committee with Dr. Bernard Dolansky (who will remain on the committee as CDA past-president through the October planning session), Dr. Wenn, Dr. Sigfstead and Mr. Jardine Neilson, CDA's executive director. ■

Saskatchewan Dental College Appoints New Dean



Dr. Ray E. McDermott

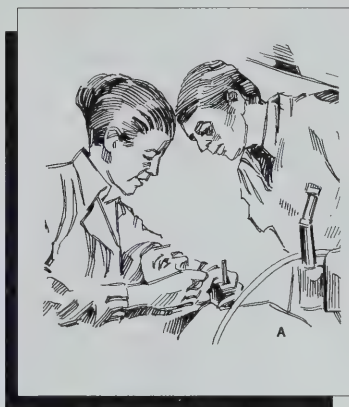
Dr. Ray E. McDermott has been appointed as dean of the University of Saskatchewan's College of Dentistry.

Dr. McDermott, whose appointment was made official July 1, had served as acting dean of the college for the past year.

After receiving his dental degree from the University of Toronto in 1961, Dr. McDermott went on to earn a diploma in dental public health in 1969 and a master of science degree in health administration in 1973.

Before moving to Saskatoon to accept a teaching position in the college of dentistry, Dr. McDermott was assistant director of dental services in Toronto's health department. In Saskatoon, he served as a faculty member and as the head of the college's department of community and pediatric dentistry. ■

2nd International Dental Assistants Congress Announced



A call has gone out to dental assistants throughout the world to attend the Second International Dental Assistants Congress in San Francisco, California, November 4-8.

The congress, to be held just prior to the annual session of the American Dental Association, will provide an opportunity for dental assistants from around the world to share their knowledge and enjoy a little camaraderie. One of the main objectives of the meeting will be to formalize the International Dental Assistants Federation and provide a mechanism for world-wide continued communications.

Dental assistants interested in attending the congress or presenting a paper are asked to contact the

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

American Dental Assistants Association, 919 N. Michigan, Chicago, IL 60611. ■

Dr. Aubrey Crich Dies



Dr. Aubrey Crich

Dr. Aubrey Crich, one of only two surviving members of the "Whiz-Bangers," died peacefully in his sleep July 19 in Grimsby, Ontario. He was 95.

Dr. Crich, the first Canadian to receive a fellowship in oral surgery from the Mayo clinic, was a member of the Royal College of Dental Surgeons' famous Whiz Bang class of 1923. Named for the 77-millimetre gun used by the Germans in the First World War, the class was formed from the hundreds of students who sought entrance into the college in 1919, the year the war ended.

The original Whiz Bangers included 304 men and six women. Last winter, Dr. Crich contacted the *Journal* because he wanted to find out if he was the last surviving member of his class. We subsequently published a story on Dr. Crich in the News Update section of the February issue, "Last of the Whiz Bangers?" (59:106, 1993).

As a follow-up to the *Journal's* February story, it was revealed that Dr. Crich had one last classmate left — Dr. Richard H. McDougall of Victoria, B.C. With Dr. Crich's death, Dr. McDougall now remains as the last of the "Whiz-Bangers."

Dr. Crich lived a remarkable and full life. He practised dentistry in Toronto for 14 years before moving to Grimsby, Ontario, in 1940. For

the next 10 years he combined his dental practice with fruit farming. In 1950, however, he returned to full-time practice, eventually retiring in 1969.

In retirement, Dr. Crich ventured into yet another career, nature photography. His extensive collection of 3,500 slides was recently accepted as a heritage gift by the Royal Ontario Museum. ■

CDHA Elects New President



Fran Richardson Cotton

Ms. Fran Richardson Cotton of Prince George, British Columbia, was elected president of the Canadian Dental Hygienists Association (CDHA) June 20.

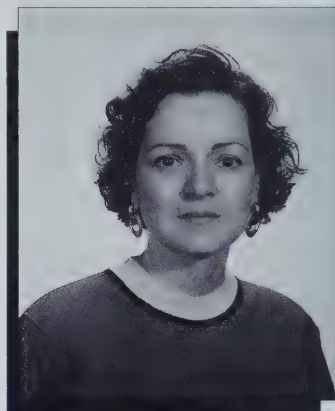
Ms. Cotton received her diploma in dental hygiene from the University of Toronto in 1971, a bachelor of science in dentistry from the University of Toronto in 1982 and a masters in education from the University of Regina in 1987. She was elected CDHA president during the association's 1993 annual session in Ottawa.

CDHA was founded in 1964 and is the national organization representing the dental hygienists of Canada. Its mandate is to cultivate, promote and sustain the art and science of dental hygiene, to maintain the honor and interests of the dental hygiene profession and to contribute toward the improvement of health of the public.

Also serving on the 1993-94 CDHA executive are: Maxine Borowko, Maple Ridge, B.C., presi-

dent-elect; and Marnie Forgay, Winnipeg, Manitoba, vice-president. ■

Periodontist Heads Montreal Dental Club



Dr. Olga Skica

Dr. Olga Skica, a periodontist, is the new president of the Montreal Dental Club.

Dr. Skica received her dental degree from McGill University, followed by a multidisciplinary residency program at the Montreal Jewish General Hospital. After several years in general practice, she entered the graduate periodontal program at the University of Washington in Seattle.

Other members of the club's executive include: Dr. Kenneth Bentley, past-president; Dr. Gerard Weinlander, president-elect; Dr. Sam Sgro, vice-president; Dr. Mike Percio, secretary; Dr. Frank Kay, treasurer, and Dr. Leo Moran, archivist.

The Montreal Dental Club, one of the city's oldest, was founded in 1897 by nine dentists seeking a forum to share dental knowledge. ■

Dr. C. Edmund Kells, Jr. — Dental Genius

Dr. C. Edmund Kells, Jr. was one of those extraordinary men whose genius ventured into avenues yet untravelled and whose innovative ability left a heritage of well-being. He literally gave his life to dentistry.

Born in 1856, Dr. Kells was son of a prominent dentist. He eventually followed his father into the profession, first graduating from the New York College of Dentistry in

The new Colgate Precision™, clinically proven to remove up to twice as much plaque as Oral-B, Reach and Crest Complete*.

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and therein lies the reason for its superior plaque removal.

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new bristle configuration promotes more effective brushing because its Triple Action bristles are designed to reach in, between and around teeth and gums without relying as much on brushing technique.

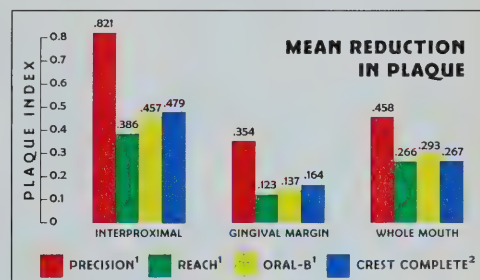
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sweep plaque from the gingival margin, yet treat tender sulcus areas with care.

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Superior plaque removal and a pleasure to use – two good reasons to brush with Colgate Precision.



1. Sharma, N. et al., BioSci Research, Canada, Journal of Clinical Dentistry, Vol. III, Suppl C, C13 – C20, 1992. 2. Balanyk, T.E. et al., Journal of Clinical Dentistry, Vol. IV, Suppl D: D8 – D12, 1993. (Plaque Index values for Precision: Interproximal = 0.763; Gingival Margin = 0.380; Whole Mouth = 0.412).



*Clinically proven to remove up to twice the plaque at the gingival margin and interproximally than Oral-B 40, Reach Full-Head Soft and Crest Complete Soft. Oral-B, Reach and Crest Complete are registered trademarks of Oral-B Laboratories, Johnson & Johnson Products, Inc. and Procter & Gamble respectively.

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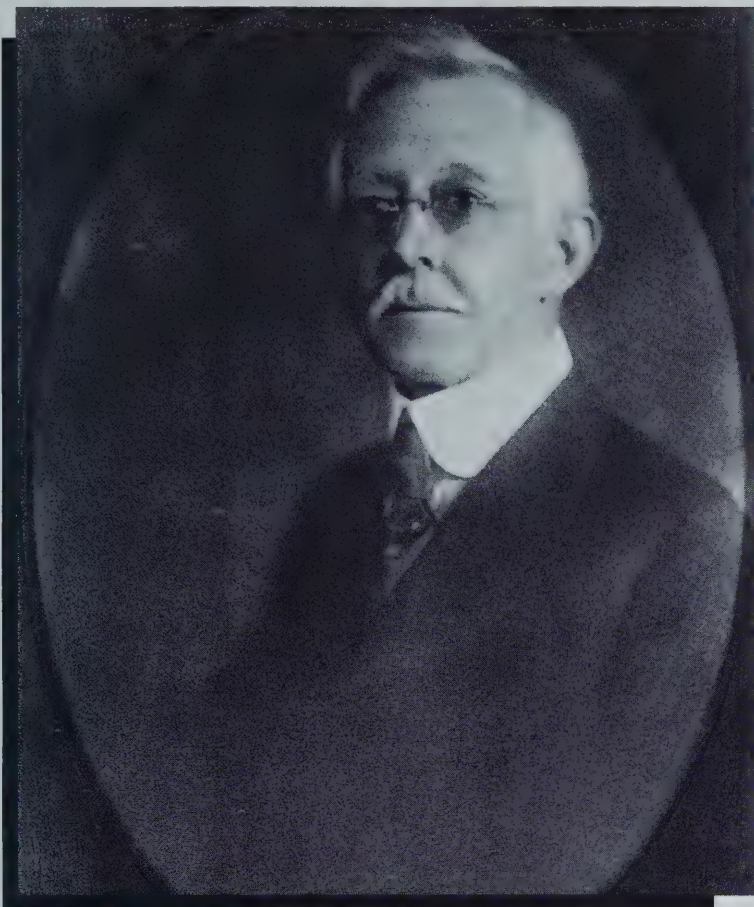


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Dr. C. Edmund Kells, Jr.

1878 and then joining his father's New Orleans, Louisiana, practice.

Electricity was in its infancy in those days. It needed men like Dr. Kells to see its endless possibilities and put it to work. In fact, Dr. Kells was the first in North America to bring commercial electricity into a dental office and the first to drive a dental engine with electrical energy. He also introduced dentistry to compressed air and its many uses. But his most notable legacy may have been his work in the area of suction and aspiration, which are both so important in dental practice today.

Throughout his life, Dr. Kells held more than 30 patents, many of which reached beyond the bounds of dental practice. Among other things, he developed an automobile jack, a fire extinguisher, and a starter-brake system for building elevators that is still in use today.

When he wasn't inventing, Dr. Kells lectured extensively on clinical dentistry, prevention and the proper management of a practice. He con-

tributed more than 150 papers to the literature and authored two books. And, always ahead of his time, he was one of the first dentists to hire a woman as chairside assistant.

But Dr. Kells is most remembered for his work in radiology. In December 1895, Wilhelm Roentgen announced his discovery of X-rays in Wurzburg. By July 1896, Dr. Kells had not only built his own radiation machine, but at a meeting of the Southern Dental Association in Asheville, North Carolina, he demonstrated — for the first time in the world — the use of X-rays in dentistry.

During his career, Dr. Kells experimented extensively with his X-ray devices. He cut his own intra-oral film and wrapped it in black paper and rubber dam to keep it dry. Then, he used modelling compound to create the forerunner of today's film holder. He even discovered, more by accident than planning, that a filter would prevent radiation from burning the face of his patients.

Unfortunately, in Dr. Kell's day very little was known about safe exposure times and the hidden dangers of radiation. From years of holding film in place with his fingers, Dr. Kells developed cancer in his right hand. Over a period of 20 years, and 42 surgical operations, he progressively had his fingers, hand, arm and shoulder amputated. Finally, on May 7, 1928, more to spare his family further distress than to relieve his own agony, he took his own life. Truly a martyr to the profession he loved and served. ■

Refusal To Replace Amalgams Does Not Constitute Malpractice

A dentist who refused to replace a patient's amalgam restorations with resin has been found innocent of malpractice by the Ontario Health Disciplines Board.

The case, heard by the board in February, arose when the attending dentist at a provincial facility refused to comply with a patient's request to have his amalgam restorations replaced with resin. In his testimony, the dentist stated that he believed the procedure was unnecessary and may have been detrimental to the health of the patient.

Much of the patient's case was based on the fact that dentist refused to provide him with the treatment he had requested. In addition, the pa-



tient claimed that he had no other recourse, as the dentist was the institution's only attending dentist. The patient has been housed in the facility for the past 13 years.

In response to queries from the Board, the dentist explained the difference in durability between amalgam and resin for posterior teeth. He also stated that he would have offered the same professional opinion concerning resin restorations to any

"WHAT'S IT?"

Our June "What's It?" left a number of our readers guessing and mystified. No, our mystery item was not a case for silver points or storing non-disposable anesthetic needles.

Our thanks to Dr. Ken Paterson of Mississauga, Ontario. He not only identified the mystery item as a receptacle for caustic material, but he even sent us a copy of the photograph and description of the item — "lunar caustic, in cocus wood screw-top case, 10 cents" — that appeared in the 1901 Eatons catalogue.

And a special thanks to Dr. Paul LaDelpha of Ottawa, Ontario, a retired surgeon and the president of the Medical Aid Foundation of Canada, who explained that lunar caustic is another name for silver nitrate, especially in stick form. The Webster dictionary tells us that cocus wood is a very hard wood that comes from the grandilla tree, and is often used to make mouthpieces for woodwind instruments.

So there you have it. The little receptacle pictured above was used for carrying silver nitrate sticks.



of his patients regardless of where they resided.

The board's ruling completely exonerated the dentist. In effect, it stated that there was no indication that the dentist had acted improperly, and that his decision to refuse treatment did not appear to be based on any factor except his professional opinion that this procedure would not be beneficial to the patient. ■

U.S. Anti-Fluoridation-ists Lose Landmark Case

A story that appeared in the *ADA News* July 12 indicates that a recent court decision may be a major victory for supporters of fluoridation in the United States — at both the local and national levels.

Heard in Fond du Lac, Wisconsin, the case was brought to court by a group of resident's trying to overturn the city council's decision to fluoridate the town's water supply.

In his ruling, Circuit Court Judge Peter L. Grimm stated, "There is ample credible evidence in the record

before this court to provide a rational basis for the city council's decision to fluoridate the city's drinking water. Those facts or issues which may be in dispute are not material to the city's rational basis and do not preclude granting summary judgment in favor of the city."

Both the American Dental Association (ADA) and the U.S. Public Health Service presented evidence to the city council confirming the efficacy and safety of fluoridated water. Their brief also included support from eight national health organizations.

Ms. Barbara Park, manager of ADA's fluoridation and preventive health activities said, "There's a lesson to be learned here — that you can pull together all these national health groups in a situation like this, even for a small town like Fond du Lac (population less than 40,000).

"It's going to be harder for the anti-fluoridationists to try this tactic again elsewhere, because now we have a summary judgment on the books. They can't use a courtroom to try to take away a city council's authority to make a decision on behalf of the public." ■

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CONTRAINDICATIONS: Hypersensitivity to the drug. The levels of spiramycin attained in the CSF are much lower than those in the blood and are too low to be clinically useful. Therefore, spiramycin must not be used in patients with meningitis. **PRECAUTIONS:** Administer antibiotics, including spiramycin cautiously to any patient who has demonstrated some form of allergy, particularly to drugs. The possibility of superinfection caused by overgrowth of nonsusceptible organisms should be kept in mind during prolonged or repeated therapy. If superinfection occurs, discontinue the drug and take appropriate measures. **Pregnancy:** Safety of this product for use during pregnancy has not been established. **ADVERSE EFFECTS:** Spiramycin has a low toxicity and rarely produces serious adverse effects; these include epigastric pain and abdominal discomfort, nausea, vomiting, diarrhea and skin sensitization.

OVERDOSE: Symptoms: No case of accidental overdosage has been reported. In oral doses over 4 g/day, abdominal discomfort, nausea or diarrhea may occur. **TREATMENT:** No specific treatment has been proposed. Management should be symptomatic. **DOSAGE: Adults:** 6,000,000 to 9,000,000 I.U. (4 to 6 capsules of Rovamycine '500') per 24 hours, in 2 divided doses. In severe infections, the daily dosage may be increased to 12,000,000 to 15,000,000 I.U. (8 to 10 capsules of Rovamycine '500' per day). **Gonorrhea:** 12,000,000 to 13,500,000 I.U. (8 or 9 capsules) in a single dose. **Children:** The usual daily dosage is based on 150,000 I.U./kg body weight in 2 or 3 divided doses; the following calculated dosages are given as a guide (see Table 1). Spiramycin is stable in gastric juices and

TABLE 1

Body weight	Dosage in capsules of Rovamycine '250'
	(750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycine '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycine '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

Additional information available from:

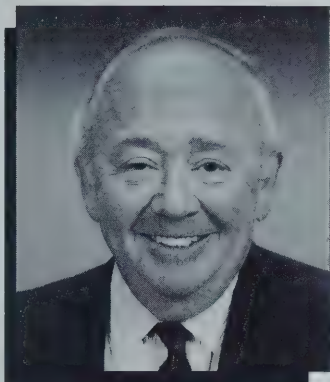
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Choosing Insurance in Step With Your Needs: The Advantages of Step-Rate Over Level Premiums

Dr. Rod Moran, President of CDSPI

As we grow older, we may prefer to forget our birthdays — especially the milestones that occur when we're halfway through a decade or entering a new one. So we may not be particularly pleased when these landmark birthdays are also the dates for incremental increases in our insurance premiums. But it's important to remember that insurance plans with such "step-rate" premiums offer major advantages, both in terms of flexibility and economy, over alternative flat-rate policies.

Under the Canadian Dentists' Insurance Program (CDIP), premium increases occur at five-year intervals from ages 25 to 65 for the basic life, dependents' life, long-term disability and office overhead expense plans. These increases occur because the premiums for these plans are calculated on a step-rate (or age-based) schedule.

The concept is simple. When you're young, you have much less chance of dying or becoming disabled, so premium rates tend to be low. As you get older, your risk of death or illness rises, so your insurance premiums increase to reflect this fact.

An alternative to a step-rate policy is a level premium policy that guarantees your payments will remain the same for the life of the policy, regardless of your age. As a result, level policy holders always know what they will pay in the future. Over the length of a policy, the total amount you'll pay for step-rate and level plans (with the same

features) will be similar, but premiums for level policies will be higher at the start and lower in the later stages compared with premiums for step-rate policies.

There are a number of far-reaching consequences for insurance buyers that result from the different ways in which premiums are collected for the two types of policies. CDIP offers only step-rate policies because they provide a number of major advantages to dentists:

1) Payments Tailored to Income

For the young dentist just starting out, disposable income is not likely to be as substantial as later earnings. In the early years of practise, lower step-rate insurance premiums allow funds to be applied to other areas where they may be more needed, for example, student loan or mortgage payments. On the other hand, a more established dentist with more disposable income will likely be better able to afford higher insurance premiums — especially if he or she has been able to pay off debts earlier in life as a result of modest step-rate payments.

2) Flexibility to Change Policies

With CDIP's step-rate plans, you pay a premium based on your risk of disability or death at the moment. By way of contrast, level premium plans require you to pay considerably more to insure your risk of disability or death during your

early, relatively risk-free years. As a result, you are effectively locked into a level policy, since you would lose the future benefits that may result from paying higher initial premiums if you left the policy early. In other words, if you wanted to switch insurance plans to take advantage of a new policy with more attractive features or one that more closely matched your changing circumstances, you might be reluctant to do so because you would have already paid out such a substantial extra amount in the early years of your level policy. With a step-rate plan, however, you have the peace of mind of knowing that you will only pay the appropriate amount to insure your degree of risk at any given time. Therefore, you can continue to take advantage of any improvements that occur in insurance plans through the years — without economic penalty.

Also, it's especially important to realize that you're deluding yourself if you think you can save money by switching from a step-rate to level policy later in life. Whenever you switch from a step-rate policy to a level policy with similar benefits, your premiums will always be higher, initially, for the level policy. You can only cut premiums by accepting a less attractive plan.

3) Long-term Investment Advantage

When comparing step-rate and level premiums, you really have to think about the value of money

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

over the long term. With a level plan, you are effectively paying out extra money at the start of the plan — without collecting interest. In effect, you're passing up the chance of earning profit on that money. For instance, the money saved on premiums in the early years of a step-rate plan can be:

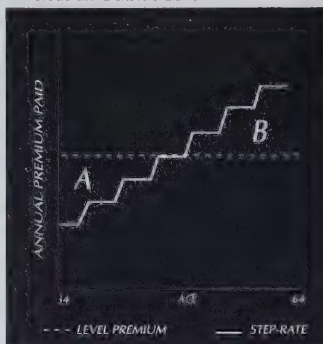
- placed in investments providing compound growth or;
- applied toward the principal of your mortgage or used to pay off equipment loans and other debts, thereby substantially reducing the interest you pay over the years.

It's true that the savings provided by level plans in later years can also be used for investment — but since these savings come later in life, they won't allow compounding over as many years. Paying less money in the early stages of a step-rate plan provides a much greater economic advantage, given the significantly greater earning potential that money gives you over the long term. So don't be fooled into believing that level plans provide better value — they don't.

CDIP's Step-rate Long Term Disability Plan Versus an Outside Level Premium Plan

In this example, which shows the total premium costs of two insurance plans purchased at age 34, the total cost of the CDIP step-rate plan over the 30-year period is approximately the same as the total cost of a level plan with similar benefits. However, if the CDIP participant invests the money saved in the first 11 years of the plan (relative to the premiums paid by the level plan buyer — area A on the graph) at a rate of five per cent, by age 65 the investment will have grown to \$52,600. By way of contrast, if the level plan participant invests the money saved in the last 15 years of the plan (from ages 49 to 64 — area B on the graph) at the same five-per-cent interest rate, that investment will only produce \$28,600 — a full \$24,000 less than the investment possible with the CDIP step-rate plan. The CDIP plan participant's investment will grow more due to

CDIP's Step-rate Long Term Disability Plan Versus an Outside Level Premium Plan



long-term compounding. In other words, given the investment flexibility the CDIP plan provides, it is far more economical in the long term than the level plan depicted in this example.

So, if a private insurer says it can offer you a "better deal" with a level premium policy, look below the surface to determine if the deal really is "better." Chances are, if

you're being offered lower premiums, you're also being offered significantly less attractive benefits.

If you would like assistance comparing insurance proposals from private insurers to a CDIP policy, consult CDSPI's free Insurance Review and Evaluation service. To access the service, call CDSPI and/or forward your insurance proposals, or any other documentation that you would like evaluated, to the attention of Tom Haigh at CDSPI. You will receive an independent, written evaluation — free of charge. As your financial services organization — and not an insurance company — our job is to give you the information you need so you can make an enlightened choice.

By allowing payments that match your earning potential, flexibility for change, and greater investment potential, step-rate plans are truly in step with your needs — no matter how many birthdays you've seen. ■

CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	July 30, 1993	June 30, 1993	
Bond & Mortgage Fund	109.44385	107.07126	8.9%
Common Stock Fund	21.46120	21.58008	19.8%
Money Market Fund	64.91595	64.60759	5.7%
Balanced Fund	40.11073	39.95348	9.1%

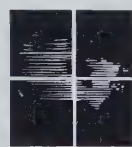
G.I.C. Fund

Term	July 30, 1993	June 30, 1993
1 yr	4.55%	5.30%
2 yr	5.35%	6.10%
3 yr	6.10%	6.35%
4 yr	6.35%	7.10%
5 yr	6.85%	7.20%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

	July 30, 1993	June 30, 1993
For further information:	\$183,435,976.00	\$182,089,847.95



CDSPI

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Scarborough, Ontario
M1H 3G8

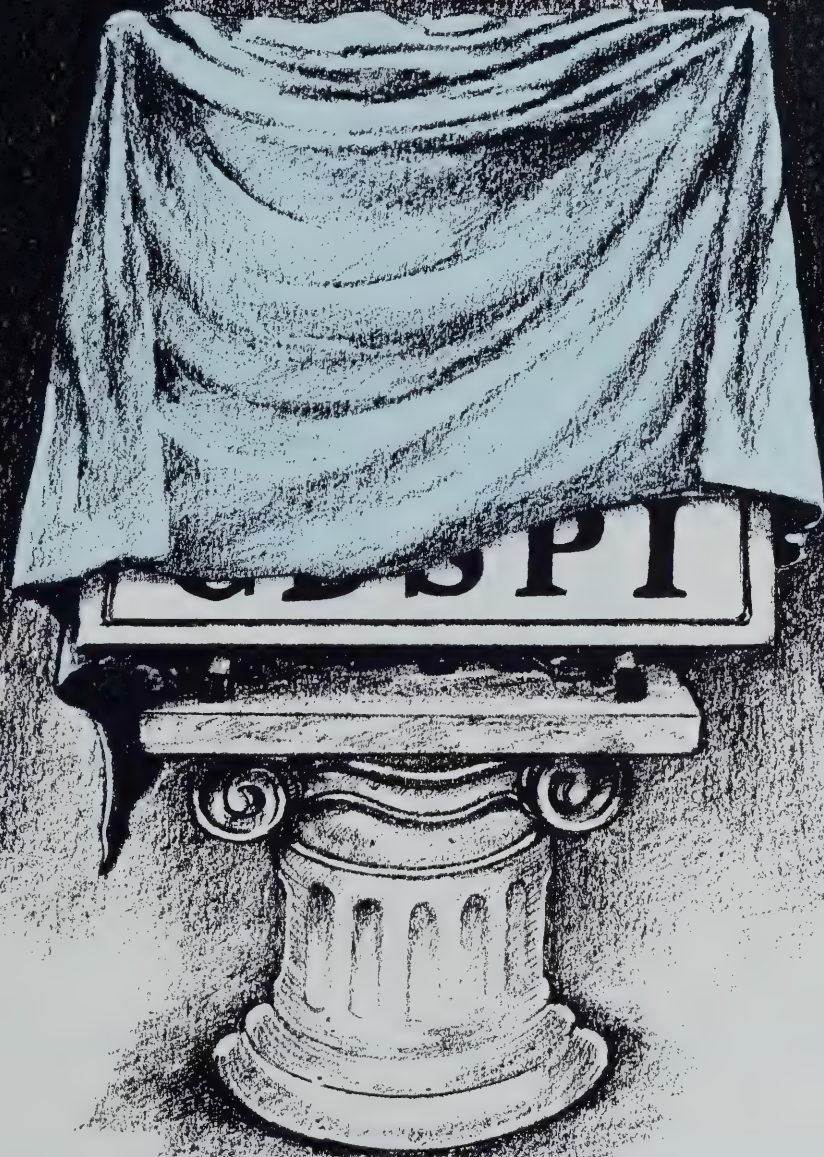
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JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

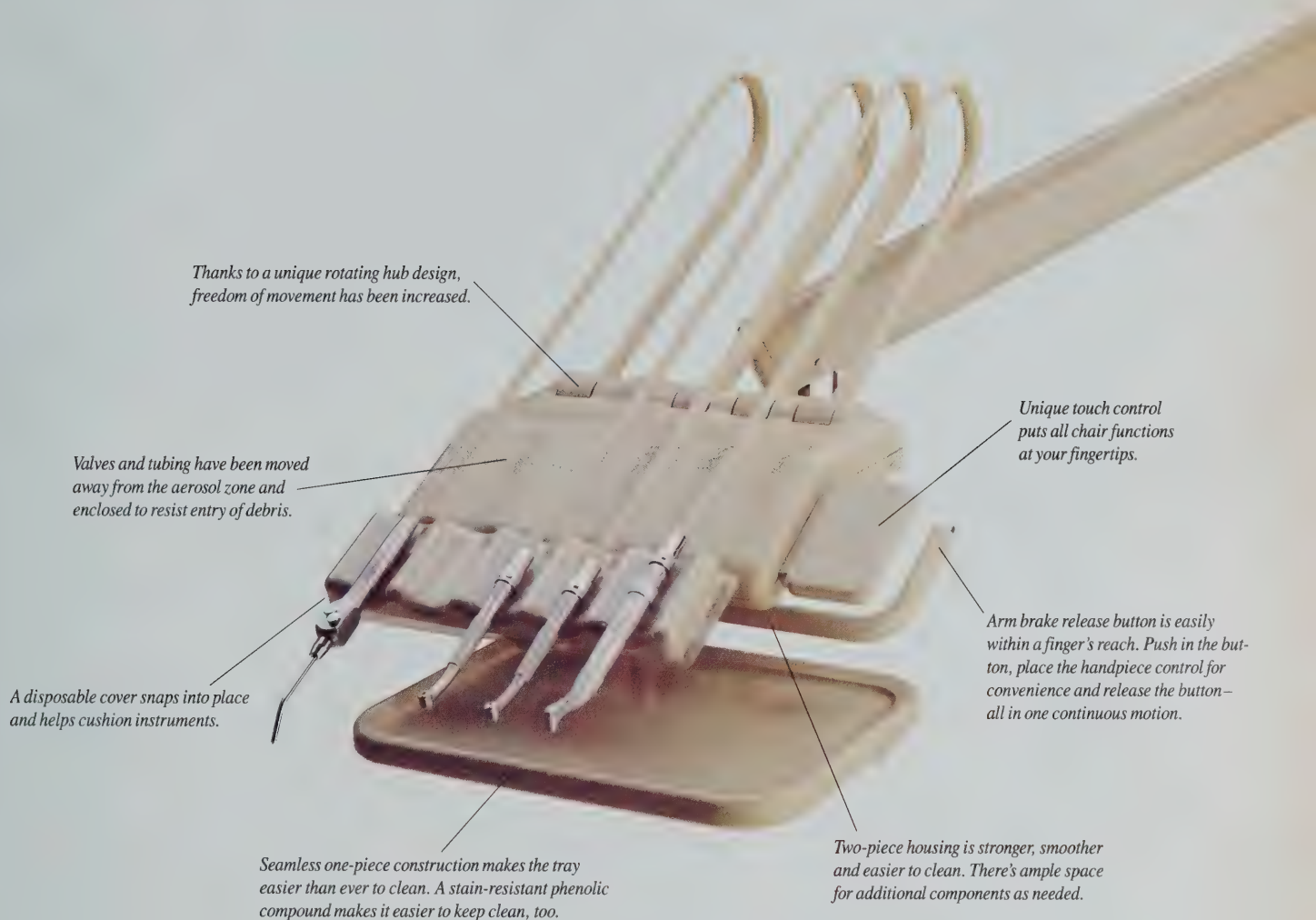
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CASCADE 

BOOK REVIEWS

The Aetiology of the Dental Diseases

By Dr. G.A. Lammie

*Privately published
150 pages*

Dr. G.A. Lammie is a remarkable man with an unusual, perhaps unique, scientific and professional background. A physiologist and prosthodontist by training, he has held academic positions at the universities of Birmingham and Liverpool in England and at Northwestern University in Chicago. Since then, he has spent many years practising general dentistry.

A much-published author, Dr. Lammie has made significant contributions to dental research, particularly on the use of tungsten carbide for dental burs and in various aspects of prosthodontics. Although he is in general practice today, and not engaged in experimental studies per se, he has maintained a very active interest in dental science.

Dr. Lammie's knowledge of the dental scientific literature and of the literature on the philosophy of science may well be unequalled. In this book, it is refreshing and stimulating to peruse his discussion of the underlying, usually unstated, conceptual framework of scientific investigation.

Today, largely as a result of his experience in general dentistry, Dr. Lammie's interests are concentrated on the two diseases whose treatment comprises the major part of the general dentists' clinical practice — dental caries and periodontal disease.

To best explain the etiology of these diseases, Dr. Lammie has developed a new paradigm, or basic theory of causation, for each of them. Rather than publish his work in the necessarily fragmented and truncated form that is demanded by scientific journals, he has chosen to write a book. This monograph format gave him the space he needed to consider the historical development of the currently accepted

theories on the etiology of these diseases.

In his book, Dr. Lammie rightly points out that little has been added in over a century to Miller's chemico-parasitic theory on the pathogenesis of caries, although Miller himself believed that there was an additional "unknown cause." Dr. Lammie suggests two additional factors, tissue fluid and imposed force. He includes gingival transudate and inflammatory gingival exudate as tissue fluid factors, and masticatory and eruptive forces as imposed force factors.

Similarly, Dr. Lammie states that little of an essential nature has been added to Fish's explanation of periodontal disease, which he described as being entirely the result of local inflammation in the gingival crevice. Dr. Lammie believes that the theories of Gottlieb and Orban better explain the clinical presentation and course of the disease. In addition to local inflammation, they included atrophy and traumatic occlusion as possible causes of periodontal disease, but were unable to prove this theory with the methods of scientific investigation available to them. That left readily demonstrable local inflammation as the presently undisputed sole cause of the disease. Dr. Lammie proposes that tissue atrophy is actually the chief factor in the development of periodontal disease and suggests that the atrophy is secondary to ischaemia.

These theories are argued at length and supported by data from a remarkably wide range of old and recent scientific publications. They are further buttressed by Dr. Lammie's own clinical observations from some 50 years in dental practice, all of which makes for interesting and stimulating reading.

Dr. Lammie is well aware that his theories must be subjected to experimental examination and, even before that, to debate and argument. But he doesn't think this is likely to happen. He fears that dental academics will prefer to continue to plough known fields rather than consider venturing into new

pastures. I hope that events prove otherwise.

If you are interested in purchasing this book, it is available by writing the author at: Goldenacre, Stoneleigh Road, Bubenhall, Coventry, England CV8 3BT. In addition, the University of Toronto library has a copy, and other university libraries may have one as well.

Reviewed by:

J.H.P. Main, BDS, PhD, FRCD(C), FRC Path

Professor and head, department of oral pathology, faculty of dentistry, University of Toronto.

Rethinking AIDS, The Tragic Cost of Premature Consensus

By Dr. Robert S. Root-Bernstein

The Free Press, Maxwell Macmillan, Canada

512 pages, \$35

This is not a conventional text on AIDS. Instead, it is a stimulating treatise that forces the reader to question the very logic of the "HIV causes AIDS" theory. The author, Dr. Root-Bernstein, is a historian, philosopher, and currently an associate professor of physiology at Michigan State University. His academic credentials and experience have allowed him to conduct a comprehensive review and insightful reinterpretation of the medical and social literature on AIDS.

Dr. Root-Bernstein's analysis — as outlined in this 512-page, 11-chapter book — leaves no doubt that the current dogma associated with the etiology of AIDS has so many anomalies and contradictions that its pursuit is hindering the search to find a cure rather than overcoming this modern plague.

The reader should not be daunted by the number of pages in this book. Approximately 130 of them consist of notes, pertinent references, and a comprehensive index. Beginning with some obvious inconsistencies, such as his belief that AIDS existed long before the 1980s, and that AIDS has occurred

without HIV, Dr. Root-Bernstein begins the text by outlining the necessary relationship between immunosuppression and AIDS. He then proceeds to identify the numerous infectious and non-infectious diseases, sexual and social behaviors, and prescription and non-prescription drugs that separately or together, with or without HIV, may result in AIDS. In addition, he dramatically demonstrates that all individuals with AIDS have, whether HIV is present or not, sufficient reasons to be immunodeficient.

In a provocative chapter titled "Autoimmune Processes and Immune Suppression in AIDS," the author describes a number of theories that attempt to explain AIDS as an autoimmune phenomenon. Needless to say, he uses this opportunity to recount his previously published Multiple-Antigen-Mediated Autoimmunity (MAMA) hypothesis. According to Dr. Root-Bernstein, MAMA explains why, when it comes to AIDS, Koch's postulates will never be satisfied, why two pathogens (i.e. cytomegalovirus and mycoplasma) acting synergistically could cause AIDS, and why sperm (via unprotected anal sex) and blood products (Factor VIII, Factor IX) could induce the immunosuppression associated with AIDS.

A revealing chapter compares and contrasts AIDS in North America and Equatorial Africa. By explaining the associated risk factor for AIDS in Africa, and by comparing them to the multitude of immunosuppressive agents and diseases associated with promiscuous (overwhelmingly homosexual) behavior

and intravenous drug use, the author develops a convincing argument that the heterosexual spread of AIDS will not occur in North America or Europe. The penultimate chapter presents the multifactorial synergistic theory, which states that AIDS is the result of a combination of many immunosuppressive factors (blood products, semen, viral and bacterial pathogens, prescription and non-prescription drugs, and autoimmune diseases), and that different sets of factors may operate among different "high risk" individuals. According to this theory, while HIV may often be present in AIDS, it is not necessarily a cause of AIDS but an excellent marker for the presence of other immunosuppressive agents.

Along with Peter Duesberg, Joseph Sonnabend, and Harry Rubin, Dr. Root-Bernstein has been a thorn in the side of the traditionalists who still promote HIV as the cause of AIDS.

However, as indicated by the author in the last chapter, the simplistic one germ, one disease, theory has failed to develop the vaccine promised in 1984; does not recognize the complex mixture of medical, social, and behavioral influences on AIDS; and ignores the multitude of immunosuppressive factors that exist among its victims. In the final analysis, Dr. Root-Bernstein does not know the cause of AIDS, but he believes that no one else does either. To overcome this state, a complete rethinking of AIDS is, in his view, not only necessary, but mandatory.

As a postscript, the author has

some revealing comments about the "Florida Case" concerning the possible transmission of HIV by Dr. David Acer to his patients. According to Dr. Root-Bernstein, the viruses that infected the patients may not be as similar as indicated by the Centers for Disease Control. Furthermore, the centers failed to determine to what extent the patients may have had other immunosuppressive factors that made them unusually susceptible to AIDS, such as anemia, malnourishment, bulimia, anorexia, non-prescription non-injectable drug use (i.e. cocaine, nitrites, morphine, amphetamines), prescription drugs (antibiotics, steroids) or anal sexual practices.

He makes the interesting observation that since Dr. Acer had AIDS and, by definition, other opportunistic infections, and since HIV is a difficult virus to transmit, the "infected" patients would have been more likely to contract these other pathogens from the dentist than HIV. However, there have been no investigations to assess such occurrences. Obviously, if there is a need to rethink AIDS, there is a need to rethink the current infection control practices that centre on HIV as the cause of AIDS. This, if for no other reason, is sufficient justification for recommending this book to thoughtful, liberated readers whose minds are not confined by the barriers of dogma.

Reviewed by:
J. Hardie, BDS, M.Sc., FRCD(C)
Head, department of dentistry,
Vancouver General Hospital

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CDA LIBRARY

What's New In the Library This Month?

Stress In Dental Practice

This month's library package features articles on stress in dental practice. The package is available to all CDA members at a cost of \$5 per package (plus applicable taxes). To get your copy, just give us a call at: 1-800-267-6354 or 613-523-1770, ext. 234., or fax us at: 613-523-7736.



The articles included in this month's package were located through a MEDLINE search. Member dentists who are interested in obtaining articles or abstracts on specific topics may contact the library directly to order a personalized MEDLINE search.

1. Alty, C.T. Communication helps ease stress when a staff member resigns. *Dental Office* 1989; 1(1):1, 10-1.
2. Bianco, R. Stress in the dental office: occupational hazard or the "spice of life"? *Dentistry* 1991; 11(4):17-8.
3. Blatchford, W.A. Five ways to reduce stress. *Dent Today* 1991; 10(7):80-1.
4. Borea, G., Montebugnoli L. and Braiato A. The effects of patient anxiety on the cardiovascular stress of dentists. *Quintessence Int* 1989; 20(11):853-7.
5. Brand, A.A. and Chalmers, B.E. Age differences in the stress patterns of dentists. *J Dent Assoc of S Afr* 1990; 45(11):461-5.
6. Frazer, M. Contributing factors and symptoms of stress in dental practice. *Br Dent J* 1992; 173(3):111.
7. Gramsch, H. Stress on the job: coping strategies for the dental team. *Dent Assist* 1989; 58(4):15-8.
8. Herrington, J.W. The stress of being a dentist and why you don't have to take it. *Tex Dent J* 1989; 106(12):17-8, 53.
9. Kasianiuk, D. Good scheduling stops stress. *Dent Pract Manage* 1987; Spring:28, 30.
10. Katz, C.A. Stress factors operating in the dental office work environment. *Dent Clin North Am*

- 1986; 30(4 Suppl):S29-36.
11. Kroeger, R.F. Stress management for the dentist and staff. *Ohio Dent J* 1985; 59(9):27-9.
12. Liebowitz, C.S. To release stress — exercise. *N.Y. State Dent J* 1989; 55(5):36-7.
13. Litchfield, N.B. Stress related problems of dentists. *Int J Psychosom* 1989; 36(1-4):41-4.
14. Murtomaa, H., Haavio-Mannila, E. and Kandolin, I. Burnout and its causes in Finnish dentists. *Community Dent Oral Epidemiol* 1990; 18(4):208-12.
15. Nuckles, D.B. and Barnett, R.J. Stress relaxation techniques for the dental practitioner. *Compend Contin Educ Dent* 1991; 12(7):519-20.
16. Unger, R.S. Anatomy of a crisis. *Ont Dent* 1989; 66(9):38-40.

17. Unger, R.S. Things change. *J Can Dent Assoc* 1990; 56(4):305-7. 1989; 55(5):36-7.

Recent Acquisitions

The following texts have been received by the library and are available to members of CDA for \$5 each plus applicable taxes (this cost covers shipping and handling).

1. Bennett, J.C. and McLaughlin, R.P. *Orthodontic treatment mechanics and the preadjusted appliance*. London. : Wolfe, 1993.
2. Keith, D., ed. *Surgery of the temporomandibular joint*. 2nd ed., Boston. : Blackwell, 1992.
3. McLaughlin G. and Freedman G.A. *Color atlas of tooth whitening*. St. Louis, Missouri. : Ishiyaku EuroAmerica, Inc., 1991.
4. McNeill, C., ed. *Temporomandibular disorders : Guidelines for classification, assessment and management*. 2nd ed., Carol Stream, Illinois. : Quintessence Pub. Co., Inc., 1993.
5. Sapienza, F.J. *Computers in the dental office : How to evaluate, select and get the most out of your system*. Brooklyn, N.Y. : Mare Pub. and Distribution, 1992.

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JOURNAL

September/
September
1993
Vol. 59
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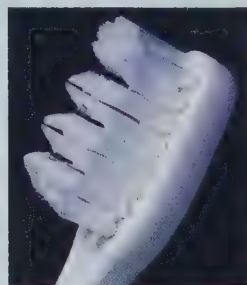
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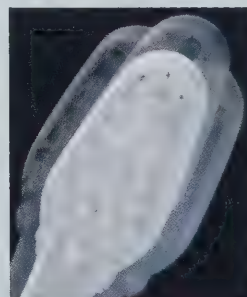
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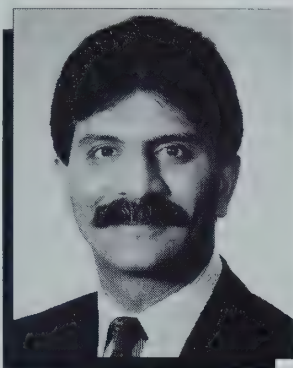
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PRACTICE MANAGEMENT & SUCCESS



Determining Your Practice's Business Value

Imtiaz Manji, B.Sc.,

President of ExperDent

This fall, CDA will launch an exciting new venture, **Taking Care of Business**. Developed in cooperation with Experdent Consultants Inc., the program is already generating a lot of excitement in the dental community. Designed to help dentists at virtually every stage of their careers, the program is based on a series of books that new graduates, dentists considering retirement and those sandwiched in between will find stirring, innovative and invaluable. To give you a taste of what's to come, here's an excerpt from the first book in the series, **Practice and Value Management**, to be published later this fall.

What is Business Value?

Since the dawn of time, people have had to work to make a living and put food on the table. Whether that living is achieved by hunting and gathering, cultivating and harvesting, laboring and manufacturing, buying and selling, or providing professional health care services, the goals are the same; to generate income and profit to support oneself (and often one's family) for a lifetime. Dentistry is no exception.

The ability of your dental practice to generate sustained income and provide financial resources to meet your lifetime income needs is its business value.

As such, your dental practice is your primary economic tool. Understanding the business value of your practice means understanding the factors that affect your lifetime income. Practices with a high busi-

ness value are more likely to provide well for their owners. This means the value of a dental practice is more than just its assets or goodwill; it includes profitability and the net income of the practice owner.

Price vs. Value

There is often a wide discrepancy between the fair market value of a dental practice and the price that would be paid for it. Price is something agreed to between a buyer and a seller with fair market value usually being the starting point for negotiations. While fair market value is based on measuring a practice's assets, price is based on risks.

Business value takes into account both the fair market value of a practice and the risk factors associated with it. Simply put, a practice with a high business value is achieved by maximizing the practice's assets and net profitability.

Unlike fair market value which is cumbersome to measure and manage, the business value of a practice can be examined with relative ease. Since your patient base is a major asset in determining fair market value, and potential profits are the most important consideration when determining risk, the business value of your practice is measured by how effectively you manage everything between patients and net profit.

From Patients to Profits

Suppose you are looking through announcements of prac-

tices that are for sale and you come across a prospectus for the ideal practice:

Retiring dentist seeks to sell ideal suburban practice. 2,500 active patients, 20 new patients per month, 100 per cent patient participation in continuing care, 100 per cent recall retention, 100 per cent case acceptance on ideal treatment plans, 0 appointment no-shows and cancellations, 100 per cent of production collected monthly, expenses less than 30 per cent of production.

You would probably think the above announcement is a joke because it is too good to be true. If the ideal practice actually existed, few dentists could resist making an offer because there wouldn't be any risk. You don't have to be a mathematical wizard to recognize that this is a valuable practice.

Now, compare the ideal practice to another practice with identical facilities, location, equipment, staff and patient base, but with more realistic and average dynamics:

Retiring dentist seeks to sell typical suburban practice. 2,500 active patients, 15 to 20 new patients per month, 70 per cent patient participation in continuing care, 80 per cent recall retention, 65 per cent case acceptance, two broken appointments per day, 97 per cent of production eventually collected, expenses about 60 per cent of production.

The value of a typical practice is significantly lower than the value of the ideal practice. These examples show how two practices with

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9



identical assets (including the patient base) can have different values. The value of the typical practice is lower because it is less efficient at using its assets to create profit. There is a higher risk in the typical practice because there is a greater chance it will be unprofitable in the future.

Major Practice Management Systems

Practice management systems are the techniques dental practices use to manage assets and create profit. Good practice management systems are effective at maximizing value and minimizing risk. Poor practice management systems let much of a practice's potential slip away through inefficiency and ineffective procedures.

As an owner of a dental practice, you establish systems, policies, procedures and job tasks to manage the daily flow of the office. Although there are many different policies and procedures in the dental office, most of them fit in the six major systems that have the greatest effect on the value of the practice.

Patient Management

Patient management systems are based on managing your pool of existing patients. Recall systems, retention and continuing care strategies are important features in patient management.

Internal Marketing

Internal marketing is concerned with new patient flow. Sources of new patients include emergency patients, walk-ins and referrals. Referral management and the new patient examination are key aspects in a marketing plan.

Case Management

Case management encompasses the diagnosis, planning and presenting of treatment. There are many reasons why patients do not accept treatment. Case management ensures that your diagnosis and treatment plans are presented to patients properly.

Appointment Control

Appointment control focuses on how effectively the schedule is

planned and managed. Proper planning in the schedule is essential to reducing stress in the practice and keeping a steady level of productivity.

Payment Control

Payment control ensures patients pay for treatment rendered to them. Managing the accounts receivable, collections and financial arrangements of the practice are fundamental to payment control.

Expense Control

Expense control measures how well your practice controls cash flow and minimizes expenses. Poor expense management can rob your bottom line and unduly limit profits.

The most important point to remember is that the diagram of practice management systems is linear. Slippage occurs when a management system does not meet its potential. Since the slippage in one system affects the potential of the next system, slippage has a compounding effect. Like interest on a bank account, compounding can add up significantly. Since profit is

the last link in the practice management chain, the income you realize is a direct function of how effectively your practice systems manage the patient base.

Real Practice Potential

The business value of your practice is enhanced when you improve the effectiveness of each system and decrease the influence of slippage. Slippage is the difference between the potential and actual benefits you realize in each system.

Because you need to implement systems to manage your practice, controlling slippage forces you to set up effective in-house procedures. Good practice management strategies are based on well-defined and proven procedures. This increases the worth of your practice because it adds value to your assets. In effect, the assets of your practice are expanded to include the methods you use to manage patients and generate profit. (With all other factors in a valuation of two practices being equal, an efficient, well-managed practice will get a better return for its owner.)

TABLE I: Total Potential Patient Visits per Month

Total Patient Base	2,500
x 2 Continuing Care Visits per year	5 000
+ 12 months per year	417
+ 20 New Patients per month	437
Patients per month	437

TABLE II: Patients per Month with Slippage

	5%	Typical
Total Patient Base	2,500	2,500
— Patient Management Slippage	2,375	1,400
x 2 Continuing Care Visits per year	4,750	2,800
+ 12 months per year	396	233
+ 20 New Patients per month	415	252
— Internal Marketing Slippage	414	247
Patient Visits per Month	414	247
— Case Management Slippage	393	160
— Appointment Control Slippage	373	152
— Payment Control Slippage	354	149
— Expense Control Slippage	336	142
Patients per Month	336	142

For the sake of illustration, consider the aforementioned ideal practice. The ideal practice is achieved by eliminating the slippage in each practice management system. **Table I** uses a simple method to calculate the total potential patients visits in the practice for a month, assuming no slippage.

Now, allow for some slippage in the practice management systems. In **Table II**, the first column (five per cent) assumes that each system is 95 per cent effective. The second column (typical) is based on the slippage for the typical practice previously discussed.

The above results are extremely important to understand the business value of a practice. By examining the ratio between the patient visits for the ideal and target practice, you can measure the overall effectiveness of the practice management systems and, therefore, the business value of the practice.

$$5\% \text{ Slippage Practice} = \frac{336}{437} \times 100\% = 76\%$$

Though many practices would be envious of someone able to be 95 per cent effective in their practice management systems, the five per cent slippage practice is achieving only 76 per cent of the potential offered by its patient base.

Typical Slippage Practice =

$$\frac{142}{437} \times 100\% = 32\%$$

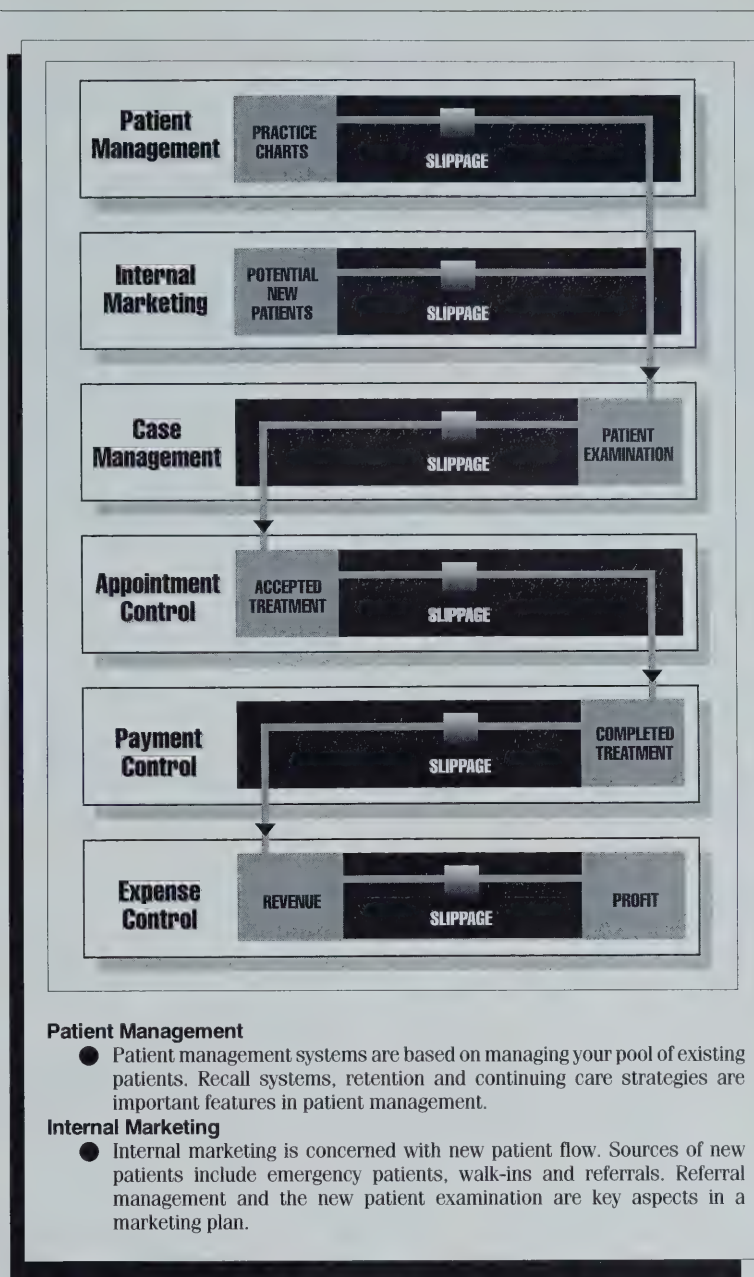
Even more surprising, the typical practice is realizing a mere 32 per cent of its potential. This is the direct result of compounding slippage as potential is lost through inefficiency in each practice management system.

The Value of Knowing

The conclusions made in the previous statements are not based on rigorous scientific or accounting principles. However, they are based on an intuitive understanding of the dynamics of a dental practice and how productivity is achieved by managing the patient base.

Analyzing Your Practice

The business value analysis has three sections:



Financial Analysis

Financial analysis examines your personal and practice financial needs and how effectively you control expenses. The approach we have used is to determine your lifetime financial needs and translate that back to a monthly income need, expense allocation and production goal.

Systems Analysis

Systems analysis takes you through each of the major practice management systems and their slippage points. Each point is discussed

thoroughly and worksheets are provided to use in your practice.

Value Analysis

Value analysis discusses other factors beside assets and systems that affect the value of a practice. Common formulas for estimating the value of goodwill are explained. Case studies are provided to illustrate different kinds of practice valuations.

For more information about *Taking Care of Business*, or to order your books, please contact the Canadian Dental Association Order Desk at 1-800-267-6354.



FDI 1994 has chosen "World Focus on Oral Health" as its theme for the 82nd World Dental Congress in order to commemorate the Year of Oral Health.

Canada is a vast country that offers a remarkable diversity of natural elements. The 1994 Organizing Committee set out to develop a convention logo that combined all the unique elements Vancouver has to offer.

Here is a description of the 1994 logo:

1. the red maple leaf, symbol of Canada, serves as a background;
2. the meaning of the five sails beneath the maple leaf is two-fold: it represents the roof of the *Vancouver Trade & Convention Centre*, which is made up of five giant sails, and the sails also depict the panorama offered by the towering Rocky Mountains;
3. finally, water had to be symbolically represented since the City of Vancouver overlooks the Pacific Ocean and is set in a natural oceanside environment.

As the logo is displayed around the world over the coming months, we hope that it will become the symbol of Canadian hospitality and goodwill.

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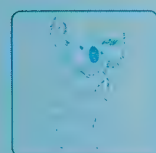
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ADDITIONAL TOURS to France and other destinations will be forthcoming in the near future. For more detailed information, contact the FDI 1994 Organizing Committee at 1-800-267-6354 by telephone or at (613) 523-3062 by fax.

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By choosing Vancouver as a destination, you can tailor your stay to suit your budget.

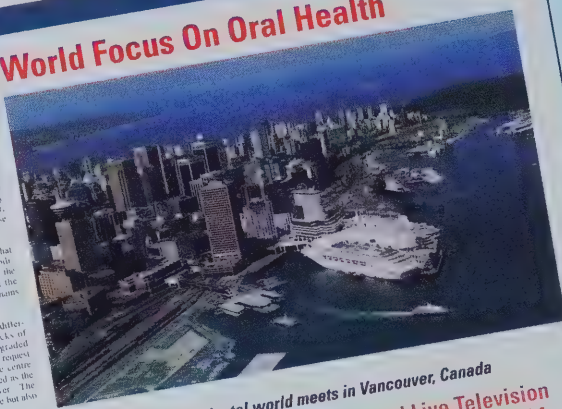
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World Focus On Oral Health



In October 1994, the dental world meets in Vancouver, Canada

Hands-On Courses and Live Television Presentations - A Highlight of the 1994 Scientific Program

"World Focus On Oral Health" is the theme chosen for the 1994 FDI Congress. A dynamic scientific program has been designed to meet the needs of dental professionals from around the world. Presentations on the most current topics, affecting the dental professional in the 1990's, will be given by a host of internationally renowned speakers. Great emphasis has been given to hands-on courses and live television presentations which will give participants an opportunity to concentrate on specific areas of interest to them. Simultaneous interpretation will also be provided for the live television presentations.



Explore the beauty of Vancouver and surrounding areas

Vancouver is a world renowned for its breathtaking natural setting and our tour program will help you discover the charm of this unique city and the unspoiled beauty of its surrounding regions. To read more about the many available during the 1994 FDI Congress, turn to pages 12-13.



Simultaneous interpretation

Simultaneous interpretation into English, French, German and Spanish will be provided for over 18 presentations, making this Congress truly international in every sense of the word! In addition, some lectures will have simultaneous interpretation into Japanese. These are clearly indicated in this program so that you can plan to attend lectures in the language of your choice.

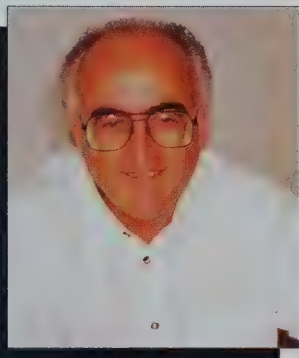
INDEX

Children's Program	14
FDI '94 Committee Members	1
Overview	15-16
General Information	4
Handbook Courses	15
Live Television Presentations	6
Message from the President of FDI and the General Chairman of the 1994 FDI Congress	3
Ministry Program	14
Press and Public Congress Tours	5
Reserved Seating Lectures	6-10
Scientific Program	11
Social Program	2
Trade Exhibition	12
Trade and One-day Tours	12

Enrolment Forms A (hand interpretation) & Enrolment Forms B (audio interpretation)

PLAN NOW TO REGISTER EARLY!

INTERVIEW



Dr. Ray Wenn

Dr. Raymond Douglas Wenn of Prince Edward Island will be installed as the 75th president of the Canadian Dental Association September 10, during the association's two-day annual meeting in Ottawa, Ontario.

Like each of the 74 dentists who have preceded him as president since 1902, when CDA was founded, Dr. Wenn will bring his own unique personality to the nation's highest dental office. And just as they did, he will offer the knowledge gained from years of service to organized dentistry, and contribute his own strengths, wisdom and leadership skills.

But Dr. Wenn will also bring something unique and all his own to the office of CDA president — a dental family. Dr. Wenn's eldest daughter, Dr. Cheryl Wenn, is a partner in his practice, his second daughter, Kimberley, is in third year dentistry at Dalhousie University, and his wife, Dianne, is the office manager. It's a singular combination, and one that may make Dr. Wenn's contributions as CDA president all the more inimitable.

Last month, the *Journal* visited the Wenn's Charlottetown, P.E.I., office to observe the family at work. Set back from a main thoroughfare, the brand-new office facility was built in 1992 to accommodate Dr. Wenn's current practice, Dr. Cheryl's new practice and Kimberley's future practice. If Stephen, the youngest member of the Wenn family, also decides on a career in dentistry, then space would be made available to him as well. So

Meet The Wenns From P.E.I. — A True Dental Family!

P.R. Crawford, BA, DMD



The doctors Wenn dental office, Charlottetown, Prince Edward Island.

far, however, Stephen is leaning toward a career in teaching.

The Wenn's general family practice is situated on picturesque river property, and each operator has windows that look out on glorious Island beauty. It's obviously "family" in more ways than one. When we arrived, Dianne Wenn was busily booking appointments, Drs. Ray and Cheryl were both treating patients, and Kimberley, off from her studies for the summer, was the attentive dental assistant. Between patients and phone calls, the *Journal* conducted an interview with this unique and special dental family.

Journal: Dr. Wenn, 1993 is a special year for you. Not only will you become CDA's 75th president, but you've attained "big 50" status. Tell us a little about your early background. Are you a true Island boy?

Dr. Wenn: Oh yes. I was born on the Island on April 16, 50 years ago. Apart from six years in Toronto after high school, and my dental college days at Dalhousie, I have lived on the Island all my life.

Journal: Was dentistry an early career choice for you?

Dr. Wenn: Not at all. Following high school, Dianne and I moved to Toronto — in Maritime circles we call this "going down the road."

After initial struggles — unemployment insurance was \$12 per week in those days — I found work with Eastman Kodak and Dianne had a part-time job at Eatons. Our first daughter, Cheryl, was born in Toronto. We bought a home there, and even our first car. But I was an Island boy in a big city.

When I was 25, we sold the house and returned to P.E.I. In September of 1968, when Cheryl star-

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

ted grade one, I entered first-year university. In 1971 I enrolled in dentistry at Dalhousie and graduated in the spring of 1975. Our family had grown by this time. Kimberley was born when I was in my pre-dent studies, and Stephen arrived during the summer break between third and fourth year dentistry. Some of my classmates said I was already a "specialist."

Journal: You became involved in organized dentistry early in your dental career. It seems that you have been around the CDA board of governors' table for many years.

Dr. Wenn: I attended my first meeting of the Dental Association of P.E.I. immediately upon graduation. In 1978, I was elected secretary/registrar/treasurer and attended my first CDA board meeting in Quebec City. In 1991, after I'd spent 13 years of going through the usual provincial and national offices, Quebec City again played a special role in my life — it's where I was elected CDA vice-president.

Journal: P.E.I. has only 47 dentists. Does that make your dental association's problems any different?

Dr. Wenn: I don't think so. The issues of busyness, manpower, taxation, licensure, insurance, advertising, dental awareness, etc., all cross provincial boundaries. Our main advantage in being small is our ability to hold "town hall" style meetings. We can usually boast an attendance of around 75 to 80 per

cent of the Island's dentists, and a consensus can be reached quickly.

Journal: Do you realize that when your daughter Kimberley joins you and Cheryl in a couple of years, if there are still only 47 dentists in P.E.I., your office will account for almost seven per cent of the Island's dentists?

Dr. Wenn: Well, it's an interesting statistic, but I can assure you that it's not the beginning of a dental empire.

Journal: Mrs. Wenn, although this isn't really an empire, you seem to be the "den mother" around here. How did you get started in the office?

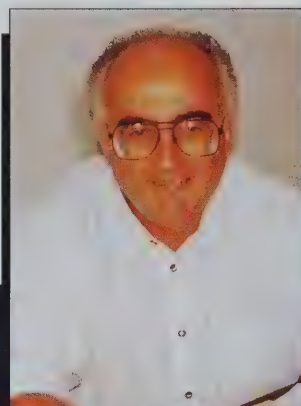
Mrs. Wenn: I guess it's a familiar story. I came to fill in for a little while and have been here forever. When Ray graduated in 1975, I agreed to work for the first three to six months to keep the overhead down. It's 18 years later and I'm still here.

Journal: What is your main role now?

Mrs. Wenn: The grand title is office manager, but it is all encompassing — receptionist, dental assistant, business and personnel manager.

Journal: How do the two dentists — father and daughter — get along? Are there any disagreements?

Mrs. Wenn: Ray and Cheryl get along just fine! Any disputes are minor and easily resolved. Their biggest complaints are that I over-



Electronic data interchange was inevitable in dentistry, and it was important from the outset for us to ensure that it was managed by its ultimate users — the dentists of Canada.

book them. However, I am the manager, and I have to keep an eye on the bottom line.

Journal: Dr. Wenn, back to you. Let's talk about some of the issues facing you as CDA president. What has happened to EDI — CDAnet? There was quite an uproar a few years ago, particularly in Ontario. Where are we today?

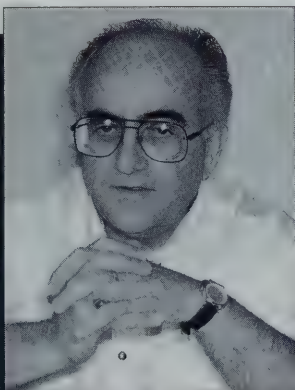
Dr. Wenn: CDAnet is becoming one of CDA's premier services and success stories. Yes, there were some opponents to EDI initially, but officially the debate is over. When I attended the ODA (Ontario Dental Association) board meeting last May, CDAnet was not a major issue.

More insurance companies and plans are coming on board all the time. Recent participants are Ontario Blue Cross and Ontario Hydro. And through amicable dialogue with CDA, all federal government plans with Great West Life no longer require employer certification.

But establishing CDAnet has not been cheap. CDA has over \$800,000 invested in the project. Revenues are beginning to flow in, though, and over time we hope to recover our investment.



Dianne Wenn, office manager - "In 1975 I agreed to work for the first six months to keep the overhead down. It is 18 years later and I am still here."



There are a host of issues that require CDA to make intelligent and accurate responses to the media and government from a national perspective.

Electronic data interchange was inevitable in dentistry, and it was important from the outset for us to ensure that it was managed by its ultimate users — the dentists of Canada. We can take pride that our goal was achieved.

Journal: Why are the Quebec dentists not participating in CDAnet?

Dr. Wenn: That's not really true. The Quebec Dental Surgeons Association (QDSA), as a corporate member of CDA, had the opportunity to join the other nine corporate bodies as a founding member of CDAnet, but they chose otherwise. This was their democratic right as an independent organization. However, individual dentists in Quebec who are CDA members can become welcome participants in CDAnet, and they're joining the network on almost a daily basis.

Journal: How are the membership figures in Quebec?

Dr. Wenn: CDA membership in Quebec is a personal disappointment. As a dentist in Canada's smallest province, I very clearly recognize the need for a strong national organization. There are a host of issues — infection control, fluoride, mercury, waste manage-

ment, accreditation, dental insurance, material standards, portability, and many others — that require CDA to make intelligent and accurate responses to the media and government from a national perspective. Less than unanimous membership doesn't help us at all. Yes, I'm disappointed that only 30 per cent of Quebec dentists are CDA members, but this represents over 1,000 dentists and that's a significant number. It is more dentists than the combined CDA membership of the four Atlantic Provinces or the total membership of Manitoba and Saskatchewan. These members are important to the CDA and Canadian dentistry.

Journal: What about the ongoing lawsuit over the appropriate use of surplus CDIP (Canadian Dentists' Insurance Program) funds?

Dr. Wenn: QDSA's claim involved the surplus funds that accumulated in CDIP's life insurance plans from 1976 to 1990. QDSA felt that these surplus funds should have been distributed to the individuals who contributed to them, either through a direct disbursement to each individual dentist or collectively through a disbursement to the corporate bodies. CDA's executive council, acting as trustees of the surplus funds, along with the other nine corporate bodies, felt that the

surplus funds should and could be used to enhance the CDIP plans — through benefits such as premium discounts, grad-package subsidies and non-smoker rates, for example.

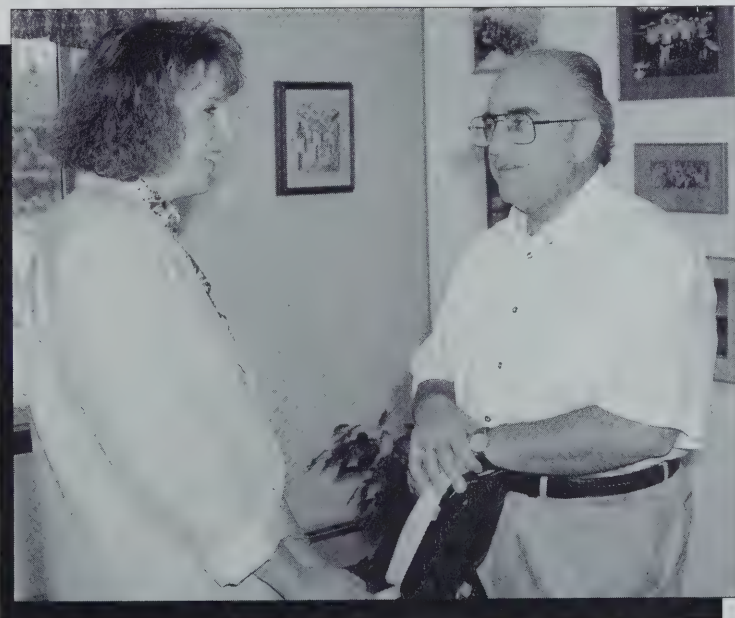
Executive council took the dispute to the Ontario Court of Justice (Commercial Court) for an opinion. When the judgment of Justice William McKeown came down on December 24, 1992, executive council was shocked. Justice McKeown ruled that although CDA "did not act in bad faith," it had used the funds in error.

On the advice of our legal counsel, this judgment is being appealed. In the meantime, it is business as usual at CDSPI (Canadian Dental Service Plans Inc.) except that all surplus funds will be frozen.

Journal: This is pretty heavy stuff. Let's give the president a rest for a minute and talk to the other Dr. Wenn. Cheryl, you graduated in 1988 and represent an increasing segment of the dental community — the dentist who is a working mom.

Tell us how you cope. You now have two children, a 2½-year-old boy (David Raymond) and a baby girl (Madeleine) who's just two months old.

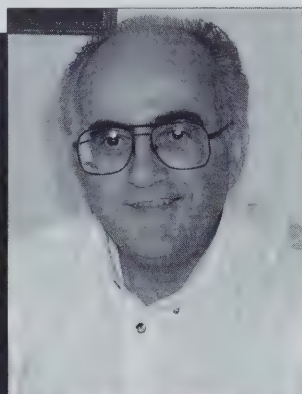
Dr. Cheryl Wenn: One of the biggest challenges of having a family, as mothers working outside the



Kimberley Wenn, a third year dental student, discusses the future of the profession with her father, CDA president, Dr. Ray Wenn.

home all know, is finding a way to balance your personal and professional life. Both my husband and I make it a point to ensure that we have time for ourselves, each other, and our children.

Journal: Do you still feel dentistry is a good career for a wife and mother?



I am convinced that there is more to professionalism than debating about what's in it for me.

Dr. Cheryl Wenn: Yes. It's an excellent career that offers women an opportunity to pursue their personal and professional goals with a high level of attainable satisfaction. And a female private practitioner, acting as a small businesswoman, can structure her work week in such a way that personal endeavors are achievable.

Journal: Mr. President, it's back to you. Hypothetically, let's say that I am a new graduate just starting practise in Ontario — a voluntary membership province. Why should I join CDA? What can CDA give me that I can't get from the ODA? Maybe I don't need to join a professional association at all?

Dr. Wenn: In addressing Quebec's situation, I enumerated a list of services that are best addressed by a national organization with a united front. This is why we call CDA the "national voice, resource, and focus of unity for the profession of dentistry in Canada." It just doesn't make good sense for each

provincial dental association to present individual positions to the public, the federal government, educators and the insurance industry.

But I am convinced that there is more to professionalism than debating about what's in it for me. Throughout a practising lifetime, the profession rewards the individual in many ways. It provides an above average standard of living, respect in the community, independence in the work place, and a feeling of pride in yourself and the profession that is hard to describe.

I believe the privilege of being a member of the dental profession demands that each of us return something to the profession. While some individuals will choose a high level of involvement in organized dentistry, I feel the minimum level of participation is to belong. Not only as a member of CDA, but also of your provincial association and your local society.

Journal: CDA has launched a new program that is tailored especially for new graduates and those dentists in the early years of practice. Why?

Dr. Wenn: CDA recognizes that new graduates and dentists in the early stages of developing a practice face a whole series of challenges — many of which simply did not exist when I graduated in 1975. Last spring, we piloted a practice management seminar to senior dental students at the University of British Columbia. It was an outstanding success.

The one-day, no-cost seminar, designed and presented by Mr. Imtiaz Manji of ExperDent Consultants on behalf of CDA, covers everything a dentist needs to know to begin a successful practice. Follow-up workbooks and cassettes have been designed to supplement the seminar, and will be provided at no cost to all new graduates who become CDA members. CDA and Mr. Manji have been invited to present this New Grad Program to every school in Canada this fall.

We will also launch a three-book series called *Taking Care of Business*. Developed jointly with ExperDent, *Taking Care of Business* offers practical advice that vir-

tually every graduating or practising dentist in Canada could use to his or her benefit.

Journal: We've been talking about new graduates. Kimberley, you're in second year dentistry at Dalhousie University. You're already involved in "political dentistry," as your school's representative on the CDA student affairs committee. What do you see ahead for dental graduates?

Kimberley: I think future dental graduates will face a number of concerns. They'll have increased financial burdens due to higher educational costs; they'll have to consider associateship rather than initial ownership, and they may have to look harder at locating in rural areas rather than urban centres.

The dentist has always had to be a continuous student, but with changing technology I believe there will have to be an even greater commitment to continuing education. I also think that with controversial topics such as infection control, mercury and fluoride being so prevalent in today's society, new graduates are going to have a greater responsibility to educate the public.

Journal: Is there any doom and gloom in your class?

Kimberley: My classmates appear to be optimistic about their future careers. However, and I noticed the same mood at the recent student affairs meeting in Ottawa, they are annoyed about the impending NDEB (National Dental Examining Board of Canada) examinations that all new Canadian graduates will soon be facing. The old system, which relied on adherence to the accreditation system, seemed to be working very well.

Another issue of major concern is the student/staff/faculty relationships in most dental schools. CDA's committee on student affairs have formulated position papers addressing this issue.

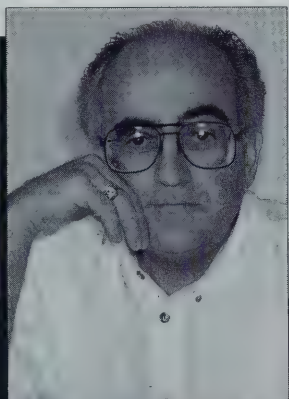
Journal: Dr. Wenn, during the 1991 planning session, CDA re-crafted and refocussed its mission statement. Today, the association's dedication to meeting the needs of its members seems to come before

the promotion and provision of optimal oral health. What does this mean?

Dr. Wenn: I must be emphatic about this. CDA is not abandoning the Canadian public. Our mission statement still emphasizes our commitment to the "promotion and provision of optimal oral health for Canadians." In fact, this commitment is exemplified by our role in many areas of public concern such as: accreditation, infection control, mercury safety, and practice ethics.

However, CDA is a member-driven organization and our members' interests must maintain a high priority. Therefore, we evaluate all our programs with members' needs in mind.

Journal: Let's see if we have this members' needs concept straight. The CDA Sydney Wood Bradley



I think you can see how successful CDA is in lobbying government on behalf of dentistry.

Library is the finest dental resource centre in Canada. Its recent acquisition of CD ROM technology means that a dentist's request for a literature search can be carried out in-house by simply punching a computer keyboard. Is this technology, or any other library request, only available to CDA members?

Dr. Wenn: Without question, the library is one of the premier services offered by CDA. During its May 1993 meeting, CDA's board of governors passed a motion restrict-



Dr. Cheryl Wenn: "One of the biggest challenges to all mothers working outside the home, is the balance of a personal and professional life."

ing access to library services to CDA members only. This is one example of our ongoing commitment to members.

Journal: Infection control is always a topic of conversation at any dental gathering. Is there anything new?

Dr. Wenn: CDA's latest effort for members is our infection control guide. This manual is a step-by-step, fill-in-the-blanks, loose-leaf binder, designed to complement our infection control guidelines and recommendations. It provides the dental office with a personalized infection control document.

Journal: Are there any changes to the current guidelines, particularly with regards to the sterilization of handpieces?

Dr. Wenn: No changes to our guidelines are contemplated in the near future. CDA continues to monitor all scientific information on infection control. With regards to handpieces, our guidelines have always stated that autoclavable handpieces should be used, and we encourage dentists who are purchasing new handpieces to ensure that they are sterilizable. However, there is still no concrete evidence that high level disinfection of non-autoclavable handpieces presents a risk to dental patients.

Journal: In 1976, CDA moved from Toronto to Ottawa to be closer to

the federal political scene. What's happening in government relations these days?

Dr. Wenn: CDA's interaction with the federal government never ends. There is always activity in the taxation area, for example. At the moment, our taxation committee is discussing problems concerning the Unemployment Insurance Act, the classification of associates as employees, and the payment of GST on the sale of inventory when a practice is sold.

We are also expressing our concerns on the Lobbyists' Registration Act, tobacco products control regulations and the Copyright Act. This gives some indication of the importance of our government relations committee. If you remember our previous successes in increasing RRSP contribution limits and establishing GST exempt status, I think you can see how successful CDA is in lobbying government on behalf of dentistry.

Journal: CDA and the Canadian Dental Hygienists Association (CDHA) recently agreed to disagree on supervision, scope of practice and primary care. Where are we in this arena? Will we see an entirely separate, independent profession of dental hygiene in the future?

Dr. Wenn: It is unfortunate that CDA and CDHA have developed such fundamental differences. Af-

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

ter two years of effort, we were unable to agree on a joint supervision statement, and each organization has subsequently produced and published its own document. It is no secret that CDA strongly disagrees with the position CDHA has taken in its supervision statement. Dr. Dolansky's presidential letter of December 1992 clearly outlined CDA's views.

Dentistry in Canada, for the most part, is delivered by the dental team. The team includes the dental assistant, the dental hygienist, administrative staff, the dental technician and the dentist. CDA supports this team approach, which we believe is the most effective, cost efficient means of delivering dental care.

As organized dentistry attempts to grapple with such terms as primary oral health care, collaborative practice, unique body of dental hygiene knowledge, independent practice, independent contracting and accountability, it will go through a period of extreme unrest. I hope that both dentistry and dental hygiene will be mature enough to ride out the coming storm and remember their prime responsibility is to their patients.

Journal: Dr. Wenn, every president comes into dentistry's highest of-

fice with some personal objectives. What are yours?

Dr. Wenn: My main focus will be financial health and stability. CDA has not escaped the scathing effects of the recession. We experienced deficit budgets in 1990 and 1991, but with good management and cooperation from CDA's staff, we enjoyed a healthy surplus in 1992. And we're projecting surplus budgets again in 1993 and '94.

The areas with the greatest potential to impact positively or negatively on our finances are membership and CDAnet. Earlier in our discussion, we talked about membership in the voluntary provinces of Quebec and Ontario, and our desire to attract the support of new graduates — this will always be a priority.

But we can never forget the continuing support of the dentists in the eight non-voluntary provinces. In fact, it is the constant working together of all our members, from coast to coast, that allows us to achieve our dual mission: meeting member needs and promoting optimal oral health for Canadians.

Journal: Surely the Federation Dentaire Internationale (FDI)'s 1994 meeting in Vancouver must be on

your mind. In fact you, Dr. Wenn, will be Canada's official host. What will FDI mean to Canadian dentistry?

Dr. Wenn: The 1994 FDI Vancouver meeting will be only the second time in the federation's 93 year history that it has met in Canada — FDI's only other Canadian meeting took place in Toronto in 1977. All of us who attended CDA's annual dental meeting last May in Toronto were part of the largest dental meeting ever held in Canada. I can assure all Canadian dentists that the FDI meeting in Vancouver will be even bigger and better. Dr. Michel Jahjah, the general chairman of our annual dental meeting, has developed a scientific program second to none. Combined with everything the city of Vancouver offers, this guarantees that FDI will be a show of shows.

In Vancouver, the Canadian Dental Association will be front and centre on the international stage of dentistry. I am personally inviting every member of the Canadian dental community to assist us in hosting one of the most significant meetings in our long and proud history. ■

In Communiqué This Month...

➤ **CDA Launches Innovative Practice Management Program: Taking Care of Business**

➤ **CDA Library Goes High-Tech**

➤ **CDA Urges Blue Cross To Reconsider PPO Insurance Plan**

➤ **CDA Considering Draft Latex Guidelines**

Clinical Features

➤ **Regeneration of Destroyed Periodontium — by Dr. Claude Ibbott**

➤ **Investments: Remember the Four Pillars — by Robert Innes**

➤ **Wrongful Dismissal In The Dentist's Office — by Peter Bowal**

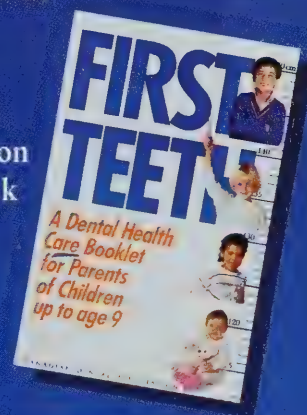
CDA members receive Communiqué five times per year as a special supplement to their January, March, April, June and September Journal.

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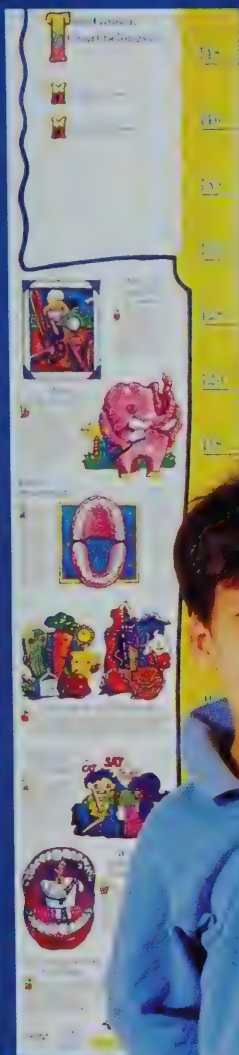
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CDA members: 25 for \$18.75; 50 for \$30
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Journal of the European Organization for
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On June 3rd 1993, the results of a clinical review by independent dental research scientists, were released. The scientific advisory group showed that, when all the relevant worldwide data were analyzed, NaF (sodium fluoride) in a compatible abrasive system was found to be significantly more effective in preventing caries than SMFP (sodium monofluorophosphate) dentifrice ($p < 0.01$).¹ As a consequence, dentists should be recommending dentifrice containing NaF in a compatible abrasive system.¹ CREST contains *FLUORISTAT*, a formulation comprising NaF and a highly compatible silica abrasive system. In fact, it's been estimated that Canadian children who start at age seven, could experience 20% fewer cavities by the time they reach 20, by using CREST with *FLUORISTAT* instead of a dentifrice with SMFP.²

RECOMMEND



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References 1. Stookey GK et al. *Caries Research*, June 1993.

Applies for equal total fluoride levels versus SMFP.

2. Procter & Gamble, data on file based on mathematical model in: Kingman A. *Caries Research* 1993; in press.

P A A B



IT'S A WINNER!

CDA'S UNIQUE NEW PRACTICE MANAGEMENT PROGRAM

"The content of the Volume is simply splendid. I was quite excited by the breadth and depth of the text. One could literally take this document and plan one's life with it. It's well organized, well written and eminently practical."

Montreal, Quebec
New Graduate - 1993

"It amazes us how relevant this information is to both new graduate dentists and long-time practitioners. We applaud CDA and ExperDent for their initiative, although we feel you may have given away too much of your valuable information."

Frankford, Ontario
11 Year Graduate

"I have just completed my review of Taking Care of Business, Volume I and I want to say that Practice Management and Value Appraisal is outstanding. Magnificent comes to mind. I am aware of no source for similar material that is as all encompassing, thorough and timely."

Duncan, B.C.
19 Year Graduate

This year, the Canadian Dental Association, in partnership with ExperDent Consultants, will launch "Taking Care of Business", its unique new Practice Management Program, for both new grads and established members of the profession. Two volumes of Program materials and practical information will be available to CDA members on:

- Practice Management and Value Appraisal
- Associate and Transition Planning

Watch for further information in both the CDA Journal and Communiqué and find out why those dentists who've previewed these materials feel that it's like "having an MBA in your back pocket".

CANADIAN
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ExperDent



Fractures of the Zygomatic Complex: A Case Report And Review

Tim Sands, DDS

Owen Symington, B.Sc., M.Sc., DDS

Nick Katsikeris, DDS, Dr. Dent.

Alan Brown, DDS, FRCD(C)

Toronto

ABSTRACT

Traumatic injuries to the midface are not nearly as common in Canada as they are in the United States, but practitioners must still be prepared for the evaluation and treatment of patients presenting with midface fractures. This case report demonstrates the experience one individual who presented with the clinical signs and symptoms of midfacial trauma. Cases of this nature can be confidently managed by an oral and maxillofacial surgeon. A review provides knowledge regarding anatomic features, classification schemes and the diagnostic and therapeutic decisions encountered with the treatment of zygomatic complex fractures.

The forward projection of the zygoma causes it to be frequently injured secondarily to blunt trauma of the midface, at the expense of protecting the orbit.

SOMMAIRE

Bien que les traumatismes médio-faciaux soient moins fréquents au Canada qu'aux États-Unis, il convient de toujours être prêt à évaluer et à traiter les patients à qui ce

genre de traumatismes est infligé. Voici donc le cas d'un sujet qui s'est présenté avec les signes et les symptômes d'un traumatisme médio-facial et l'expérience qu'il a vécue. Un chirurgien buccal et maxillo-facial peut traiter en toute confiance les cas de cette nature. Dans cet article, on trouvera en outre des données sur les caractéristiques anatomiques, les systèmes de classification, le diagnostic et les décisions thérapeutiques touchant le traitement des fractures du complexe zygomatique.

Nomenclature

The zygomatic bone itself is rarely fractured, however, it may be separated from its four articulations. Therefore, the terms zygomaticomaxillary or zygomatic complex (ZMC) fracture may be used to describe the dislocation of the zygoma itself, or an isolated zygomatic arch fracture. With regards to fracture terminology, dislocation refers to the anatomic position of the fractured bone, while displacement defines separation at the fracture line.

Incidence

In a retrospective study of 593 midfacial fractures over four years, fractures of the zygomatic complex represented 69 per cent of the reported fractures.¹ A similar prevalence of 64 per cent was demonstrated in a more recent study involving 225 patients with 356 midface fractures.² Most patients presenting with ZMC fractures were males between 20 and 29 years of age.³

Etiology

With regards to the etiology of ZMC fractures, 85 per cent are the result of assaults, falls or sports-related injuries.⁴ In a 10-year review of 2,067 ZMC fractures, the distribution of cause was reported as: assault 46.6 per cent, falls 22.4 per cent, motor vehicle accidents 13.3 per cent and sports injuries 10.7 per cent.⁵ These etiologic sources are supported by other authors.^{1,2,6}

Anatomy

Anatomically, the zygoma articulates with four bones: frontal, temporal, maxilla and sphenoid. Consequently, there are four projections: the frontal, temporal, maxillary and orbital articulations. Similarly, the zygomatic arch is

composed of two processes: the temporal process of the zygoma, and the zygomatic process of the temporal bone (Fig. 1). The most common lines of fracture have been reported in one clinical study.³ In terms of the zygomatic arch, fractures occur at the zygomaticotemporal suture and areas anterior and posterior to this articulation, creating a "V" shaped depression. The three lines of fracture seen most commonly with ZMC fractures occur anteromedially along the orbital floor extending to the orbital rim, through or medial to the infraorbital foramen, then laterally and inferiorly along the zygomatic buttress. Inferiorly, the fracture line develops through the posterior infratemporal part of the maxilla and then extends superolaterally along the lateral orbital wall and through the frontozygomatic suture.

The sensory nerves associated with the zygoma are the three cutaneous branches of the maxillary division of the trigeminal nerve. The zygomaticofacial and zygomaticotemporal nerves exit through foramina in the body of the zygoma and supply the cheek and anterior temporal region. The infraorbital nerve exits the infraorbital foramen and provides sensation for the anterior cheek, lateral nose, upper lip and maxillary anterior dentition. With regards to soft tissues, the muscles of facial expression, the zygomaticus major and minor, and levator labii superioris, originate from the zygoma. The temporalis fascia attaches to the frontal process of the zygoma and arch, providing resistance to inferior dislocation by the downward pull of the masseter, which attaches along the concave temporal surface of the zygoma. The zygoma makes a significant contribution to the lateral and inferior orbital rims and support for the globe of the eye, maintained by Lockwood's suspensory ligament which attaches to Whitnall's tubercle located on the lateral orbital wall on the inner aspect of the frontal process of the zygoma.

Diagnosis

The diagnosis of ZMC fractures is based on clinical and radio-

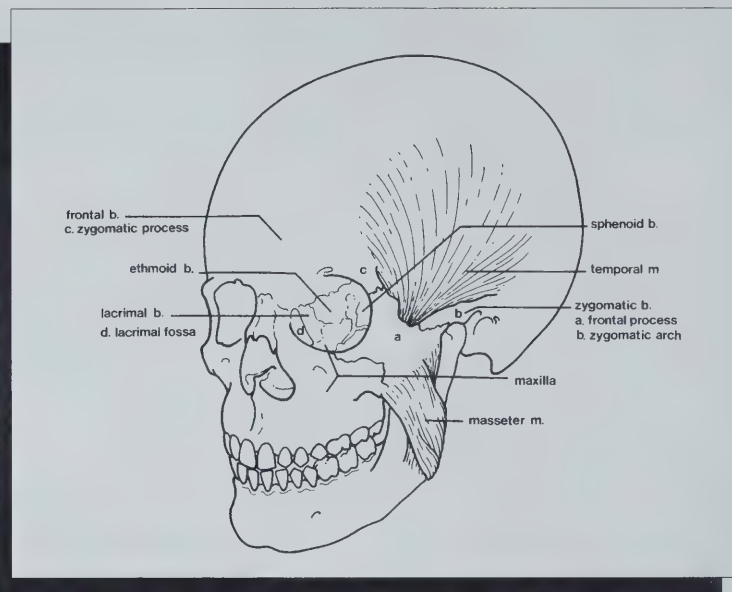


Fig. 1: The bony anatomy of the orbit and zygoma showing the muscle attachments of the masseter and the temporalis.

graphic examination and begins as an evaluation of the trauma patient, with a thorough history and systematic physical examination. Concerns include not only bony injury, but the status of the surrounding soft tissues, including the orbit. Initial evaluation is often difficult due to the presence of periorbital edema masking the other signs and symptoms. Unless surgery is obviously indicated, treatment may be deferred from four to seven days to allow the swelling to resolve for an assessment of the cosmetic deformity and functional

deficit. An ophthalmologist should evaluate the patient to assess visual acuity, pupillary response and globe status, and to identify and document abnormality prior to and following treatment.⁷

The first rule of physical exam involves inspection. The orbits are evaluated for edema, pupillary level and lateral subconjunctival ecchymosis. Extraocular movements are also documented. ZMC fractures can be associated with inferior displacement of the lateral palpebral fissure, producing an anti-mongoloid slant as the lateral

TABLE I

Clinical Findings In Dislocated ZMC Fractures In Decreasing Frequency

1.	Facial flattening*
2.	Infraorbital nerve dysesthesia
3.	Trismus*
4.	Epistaxis
5.	Lateral subconjunctival*/intraoral ecchymosis
6.	Diplopia
7.	Eye mobility problems
8.	Pupillary level difference
9.	Enophthalmos
10.	Discomfort*

*Signs and symptoms of zygomatic arch fractures

canthal tendon remains attached to the dislocated Whitnall's tubercle. The symmetry of the malar eminence is best evaluated from a "birds-eye" view, superiorly from behind the patient, with the examiner's index fingers placed lightly on the malar eminences.

Following inspection, digital palpation of the zygomatic bone for step deformities and tenderness is performed. Inferior, lateral and superior orbital rims are assessed with the index fingers while the zygomatic body and arch are palpated with three fingers in a circular motion. Crepitation indicates subcutaneous air emphysema from the maxillary sinus into the loose connective tissue surrounding the eye. Intraorally, the zygomatic buttress is also evaluated by inspection for ecchymosis and by palpation. There is a good diagnostic correlation if exquisite discomfort and step deformities are detected. The signs and symptoms of unilateral dislocated ZMC fractures are listed in **Table 1**.⁵

The majority of ZMC fractures will involve the infraorbital foramen.³ Sensory disturbance in the distribution of the infraorbital nerve can occur as a result of stretching, compression or bony impingement. Trismus, which is more commonly found with arch fractures, may be due to an impingement of the coronoid process on the displaced fragment, or from temporalis spasm. Ecchymosis is consistent with a torn periosteum allowing hemorrhage from the fractured bone to enter the soft tissue. Isolated subconjunctival ecchymosis of the lateral sclera is generally considered unique to lateral orbital damage, a component of ZMC fracture. Intraorally, maxillary buccal vestibule ecchymosis corresponds to the zygomaticomaxillary line of fracture.

Diplopia, defined literally as "double vision," can result from edema, hematoma, nerve injury or soft tissue/muscle entrapment. Diplopia occurring in concert with a lack of upward gaze usually indicates entrapment of the orbital contents within the orbital floor fracture line and is confirmed with the forced duction test. This test can be

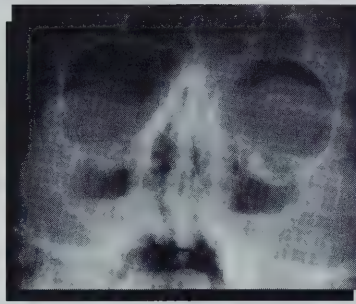


Fig. 2: Waters' view illustrating a right zygoma fracture (in another patient) with a frontozygomatic suture separation and inferior orbital rim step deformity.

performed under local anesthesia by grasping the inferior rectus tendon through the conjunctiva and attempting to rotate the globe superiorly.

Enophthalmos (decreased anterior projection of the eye) is due to an increase in orbital volume by inferolateral dislocation of the zygoma and/or a decrease in the volume of the contents of the orbit resulting from herniation, through a blowout fracture of the orbital floor, into the maxillary sinus. Enophthalmos is generally only evident following resolution of the masking periorbital edema.

Radiographic Examination

The majority of fractures can be identified on plain films. The Waters' or occipital-mental view, achieved by projecting the petrous temporal bone inferiorly, allows visualization of: the maxillary sinus, the zygoma and its processes, and the anteroinferior rim of the orbit. Identification of frontozy-

gomatic suture separation, orbital rim step deformity and a break in the continuity of the zygomaticomaxillary buttress is possible (**Fig. 2**). By comparing the right and left sides on the film, clues to ZMC fracture include: greater circumference of orbit, decreasing size or increasing antral density, and/or evidence of herniation of orbital contents into the maxillary sinus. The submentovertex or "jug handle" projection images the body of the zygoma, outlining the maxillary sinus and the zygomatic arches. Loss of the normal anterolateral projection of the zygoma and buckling of the zygomatic arch provide clues to fracture.

Other films that may provide evidence include the Caldwell view, which may demonstrate rotation, and the panorex. Computed tomography (CT) is frequently used to evaluate patients with facial trauma. However, at this time, CT generally offers little advantage to plain films unless orbital floor comminution, marked enophthalmos or associated craniofacial injuries are suspected; yet one caveat of diagnostic radiology involves taking as many films as necessary, including CT, to accurately make the diagnosis.

Classification

ZMC fractures are classified to standardize terminology, plan therapy and predict prognosis. One of the most quoted and used systems⁹ is based on the Waters' view. The Knight and North classification sys-

TABLE II

The Knight and North Classification Scheme For Zygoma Fractures.⁹

Group	Displacement	Frequency (%)
I	non-displaced fracture	6
II	arch fracture	10
III	unrotated dislocated body fractures	33
IV	medially rotated a. outward at ZM buttress b. inward at FZ suture	11
V	laterally rotated a. upward at orbital rim b. outward at FZ suture	22
VI	complex comminuted fractures	18

tem and frequency of zygoma fractures is illustrated in **Table II**. It is based on the area fractured, degree of displacement and direction of dislocation.

Other studies^{10,11} add information regarding axial rotation and propose treatment for each grouping. However, they are cumbersome due to the large numbers of divisions and subdivisions. Recent classification techniques have attempted to simplify groups for practical use, identifying the extent of surgical therapy required for repair.^{12,13} One such study,¹² based on 137 patients, identified separation at the frontozygomatic suture as a common indicator for post alignment stability. Three groups are represented: Group A includes non-displaced fractures requiring no treatment; Group B encompasses fractures with wide displacement of the frontozygomatic suture or comminution requiring reduction and fixation; Group C comprises all other fractures that necessitate reduction but no fixation.

Treatment

The goals of fracture management are to restore form to the defects that arise from injury and to restore function by encouraging fracture union. The achievement of these goals involves the principles of reduction, fixation and immobilization. Reduction or alignment of the bone fragment ends can be performed open or closed. Closed reduction is done without direct visualization, and accuracy is determined by palpation or restoration of function. Conversely, open reduction implies that the fracture is reduced surgically under direct vision.

The second principle of successful fracture management is fixation, or the maintenance of reduction. Direct fixation refers to the placement of stabilization across the fracture site. The stabilization of bone fragments at a site distant from the fracture line defines indirect fixation. The same factors that determine whether a fracture is displaced at the time of injury influence post-reduction stability. The direction of the fracture line and the muscular forces acting on the

fragments, if encouraging displacement, must be resisted by immobilization. Bony union in the line of fracture will not develop in the presence of excessive mobility.

The management of ZMC and arch fractures depends on the degree of fracture displacement, the cosmetic deformity and functional deficits. Due to the excessive periorbital edema characteristic of these fractures, most can be observed to allow resolution of the edema that may be masking the deformity and be responsible for functional disturbances. However, if gross radiologic evidence of displacement exists and surgical treatment is inevitable, it can be performed immediately. Fractures requiring treatment should be treated as early as possible (before 10 days), as during this period the fracture will often be healing and difficult to reduce, or irregularities at the fracture ends may decrease post reduction stability.

Zygomatic Arch Fractures

Isolated non-displaced zygomatic arch fractures do not require operative correction. Displaced fractures causing cosmetic deformity or with functional disturbance may be reduced by one of two approaches. The standard technique for reduction is described as the Gillies approach¹⁴ and involves a temporal incision above the ear through the lateral temporalis fascia. An elevator is inserted between the fascia and the temporalis muscle and the arch is elevated. A second technique involves an intraoral buccal sulcus approach with an incision along the anterior border of the ramus. Dissection proceeds superiorly lateral to the coronoid process and temporalis muscle to the fracture site, which is then elevated outward.

Generally, the zygomatic arch will not require fixation after reduction, but if it is unstable, indirect fixation can be applied via packing the temporal fossa deep to the arch or by the use of percutaneous circumferential wiring or heavy sutures passed around the arch and secured to an external object such as a tongue blade.¹⁵

Zygomatic Complex Fractures

Similar to arch fractures, non-displaced ZMC fractures may require no surgical treatment. If necessary, closed reduction can be performed as described for isolated arch fractures via a Gillies or intraoral technique. For the application of larger amounts of force and reduction in three planes of space, a traction hook or Girard screw can engage the body of the zygoma after introduction via a stab incision three centimetres below the lateral canthus of the eye. The zygomatic processes are palpated to confirm proper alignment.

Open reduction is indicated if closed reduction fails altogether, or if the reduction is not stable and direct bone fixation is required. One geometric and biomechanical analysis of ZMC fractures¹⁶ suggests that alignment of three of the four zygomatic processes provides the most accurate and satisfactory postoperative results, ensuring adequate alignment devoid of rotation. Surgical approaches to each of the fracture lines are varied and selection is primarily operator dependent. The lateral eyebrow or upper eyelid incision can be used to expose the frontozygomatic suture, and the infraorbital rim and orbita floor can be evaluated via a transconjunctival, subciliary or infraorbital dissection. Access to align the displacement at the zygomaticomaxillary buttress is accomplished by an intraoral vestibular incision. Confirmation of posterior reduction can be performed by visualizing the lateral orbital wall within the orbit. The access is either posterolaterally during floor exploration or more directly from the lateral rim posteriorly as long as a subperiosteal dissection is maintained.

Controversy exists with regards to orbital floor exploration when a ZMC fracture is diagnosed. Indications for evaluation include: if clinical signs of a defect exist such as enophthalmos, limited eye movement or a positive forced duction test, or if the orbital defect is greater, radiographically, than five millimetres or there is herniation of soft tissue into the sinus.¹⁷ One

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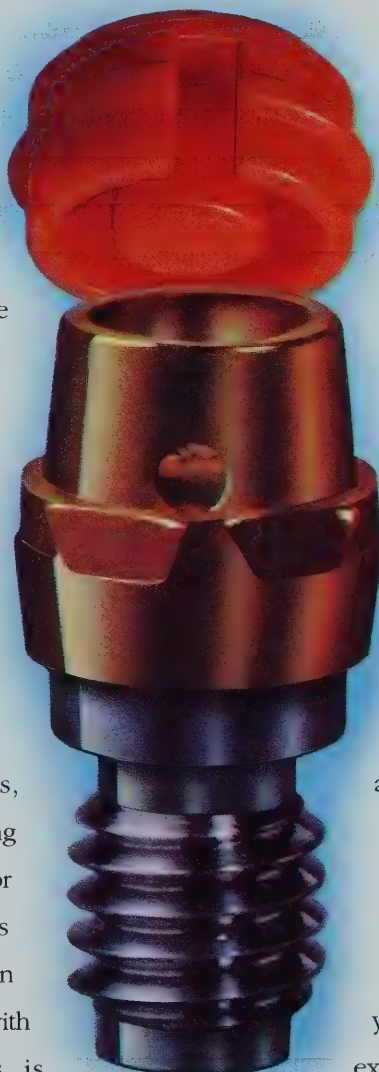
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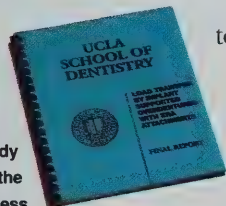
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Fig. 3: Left periorbital ecchymosis and extensive lateral subconjunctival hemorrhage.

should not avoid exploration for fear of causing orbital injury, as this is very rare. When considering fixation, even if stability is anticipated following open reduction with the methods of wire and miniplate fixation available, and the fracture site exposed, there is little justification for not ensuring the maintenance of reduction by direct fixation. Successful alignment can be maintained if two prerequisites are addressed: the use of at least one miniplate and the incorporation of the frontozygomatic fracture line as one of the points of fixation.¹⁸

With the advances in direct rigid fixation techniques, the previously popular indirect method of intra-sinus support has been relegated to historical interest. Materials such as antral balloons, penrose drains, plastic tubing, and strip gauze impregnated with Whitehead's varnish have been used to stabilize comminuted ZMC fractures. One retrospective study of 147 unstable ZMC fractures detailed the use of antral packing.¹⁹ Unfortunately, patients with maxillary sinus packing for support experienced a high degree of infraorbital dysesthesia, a 30 per cent incidence of sinusitis and a 13 per cent persistence of oroantral fistulae.

The case report illustrates one clinical approach to ZMC fractures. In general, fractures that require treatment are explored at the number of sites necessary to adequately confirm reduction. For direct fixation, a 26-gauge wire or

miniplate is placed at the frontozygomatic and/or zygomaticomaxillary buttress and the inferior rim is stabilized with a 28-gauge wire or microplate, as needed. Titanium plates are completely biocompatible and are not removed unless symptoms associated with them occur.

Case Report

A 20-year-old female presented to the oral and maxillofacial service at The Toronto Hospital, General Division, following referral from her family physician. Four days earlier, the patient was struck by a motor vehicle while riding her bicycle and sustained a blow to the left side of her face. Subsequently, she developed pain and swelling on the left side of her face with

numbness over her cheek and malar area.

The patient's medical history was noncontributory except for an allergy to penicillin.

On physical examination, the patient had left periorbital edema and ecchymosis around the left eye (**Fig. 3**). The left eye had extensive lateral subconjunctival hemorrhage. However, the pupils were equal and reactive to light and accommodation, extraocular movements were normal, and there was no diplopia or retinal hemorrhage. The left malar area exhibited flattening when viewed from above (**Fig. 4**) and a step defect could be palpated in the left inferior orbital rim at the zygomaticomaxillary suture. The patient had profound paraesthesia in the distribution of the left infraorbital nerve. The zygomatic arch appeared intact and no defect could be palpated at the frontozygomatic suture. Intraoral examination revealed no lacerations, ecchymosis or swelling. The maxilla was stable and the occlusion unchanged. Examination of the temporomandibular joint showed no abnormalities, with a normal interincisal opening. Neck examination revealed a full range of motion with no palpation tenderness. The remainder of the physical examination was unremarkable. Radiographic examination showed dysjunction of the left zygoma at the maxillary and frontal sutures on Waters' projection. The left zygomatic arch appeared in-

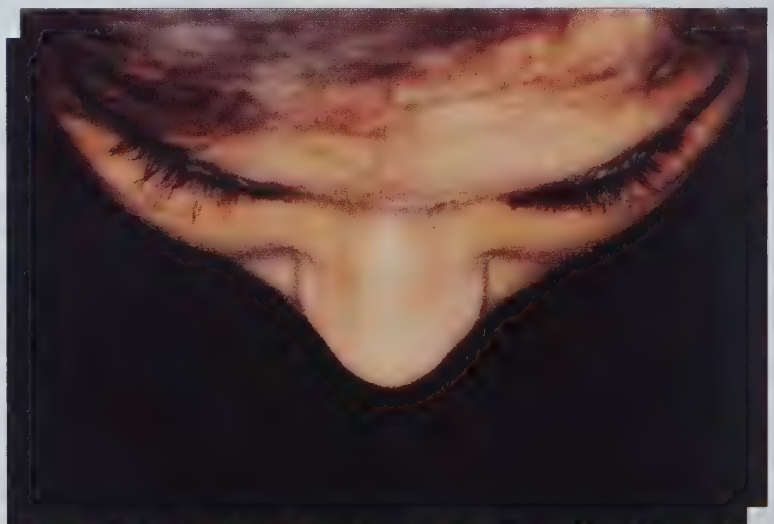


Fig. 4: Flattening of the left malar eminence.



Fig. 5: Exposure of the frontozygomatic suture through a lateral brow incision showing the fracture.

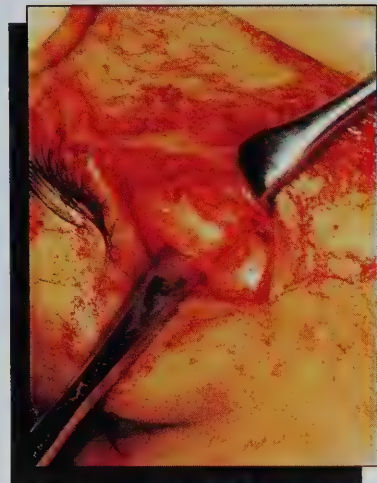


Fig. 6: Exposure of the inferior orbital rim through a subciliary incision showing the fracture at the zygomaticomaxillary suture.

tact. An ophthalmology consultation confirmed the physical findings for the eye and that there was no globe injury or diplopia. There was normal visual acuity.

A diagnosis of a healthy 20-year-old female with an isolated displaced left zygoma fracture with flattening of the malar eminence and possible nerve impingement was made and the patient was so informed.

The patient was taken to the operating room where, under general anesthesia, the frontozygomatic and zygomaticomaxillary suture fractures were exposed through lateral brow and subciliary incisions, respectively (Figs. 5 and 6). The orbital floor was explored and a small amount of fat that had herniated through the floor was retrieved. To reduce the fracture, a large Dewar elevator was introduced into the lateral brow incision posteroinferior to the left zygoma. Using careful and controlled pressure, the bony step defects at the frontozygomatic and zygomaticomaxillary sutures were reduced. A four-hole miniplate (AO) was used to rigidly fixate the frontozygomatic fracture and a 28-gauge wire was used to fixate the inferior orbital rim fracture (Fig. 7). Prior to closure, a forced duction test was performed and showed no trapping of the extraocular muscles. The

incisions were closed with 4-O vicryl, with care taken to suture the periosteum back up to the inferior orbital rim to prevent an ectropion (eversion of the lower eyelid) and with 6-O nylon for the skin.

The remainder of the patient's course in hospital was unremark-

able, and she displayed no postoperative diplopia or alteration of her extraocular movements.

Follow-up was uneventful with no complications. Complete resolution of the cosmetic and neural defects was achieved. At one year, the patient has experienced no problems with the plate and has made a full recovery.

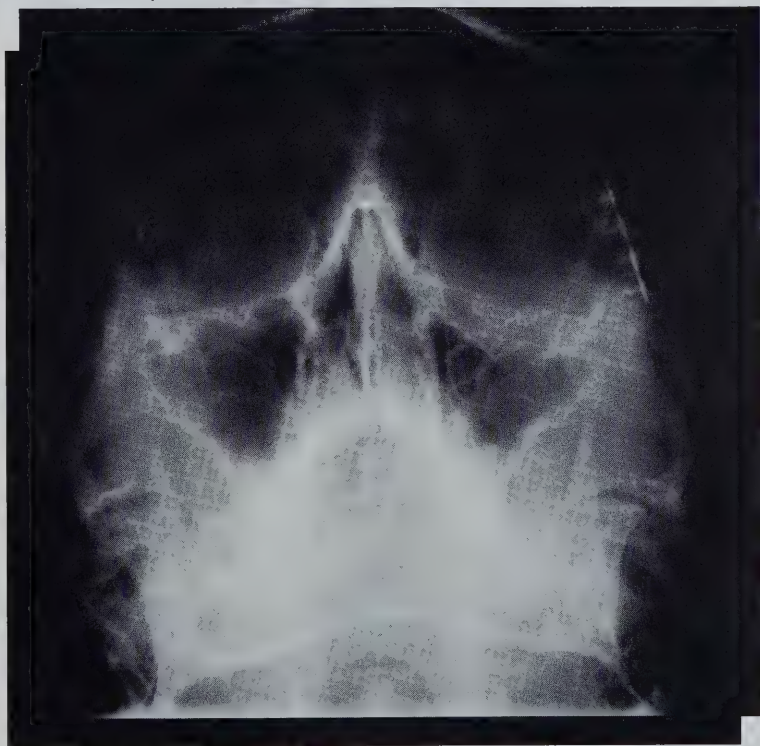


Fig. 7: Post reduction Waters' view showing reduction of the fracture. Note the four-hole miniplate at the frontozygomatic junction and the 28-gauge wire at the inferior orbital rim.



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The forward projection of the zygoma causes it to be frequently injured secondarily to blunt trauma of the midface at the expense of protecting the orbit. Although traumatic injuries to the midface are not nearly as common in Canada as in the United States, one must be prepared for the evaluation and treatment of patients presenting with midface fractures. Of interest to the general practitioner is the fact that, as dentists, we are involved with and required to recognize fractures of the maxillofacial region, especially those that may manifest with occlusal discrepancies, such as mandibular, condylar and dentoalveolar fractures. Zygoma fractures are unique in the sense that TMJ symptoms, trismus as well as concomitant dental injuries, may alert the dentist to investigate further for clinical and radiographic evidence of zygoma trauma.

This case report demonstrates the experience of one individual who presented with clinical signs and symptoms of midfacial trauma. Cases of this nature can be confidently managed by the oral and maxillofacial surgeon. The review provides knowledge regarding anatomic features, classification schemes and the diagnostic and therapeutic decisions encountered with the treatment of zygomatic complex fractures. ■

Dr. Sands is a senior resident, **Dr. Symington** is a resident, and **Dr. Katsikis** and **Dr. Brown** are assistant professors in the department of oral and maxillofacial surgery, The Toronto Hospital and the University of Toronto faculty of dentistry.

Reprint requests to: **Dr. T. Sands**, department of oral and maxillofacial surgery, The Toronto Hospital General Division, 200 Elizabeth St., Toronto, Ont. M5G 2C4.

References

1. Turvey, T.A. Midfacial fractures: a retrospective analysis of 593 cases. *J Oral Surg* 35:887-891, 1977.
2. Cook, H.E. and Rowe, M. A retrospective study of 356 midfacial fractures oc-

curing in 225 patients. *J Oral Maxillofac Surg* 48:57478, 1990.

3. Schilli, W. Treatment of zygoma fractures. *Oral Maxillofac Surg Clin North Am* 2:155-169, 1990.

4. Winstanley, R.D. The management of fractures of zygoma. *Int J Oral Surg* 10:235-240, 1981.

5. Ellis, E., El-Attar, A. and Moos, K.F. An analysis of 2067 cases of zygomatico-orbital fractures. *J Oral Maxillofac Surg* 43:417428, 1985.

6. Chuong, R. and Kaban, L.B. Fractures of the zygomatic complex. *J Oral Maxillofac Surg* 44:283-288, 1986.

7. Peterson, L.J. *Principles of Oral and Maxillofacial Surgery*. Philadelphia, J.B. Lippincott Co., 1992.

8. Fonseca, R.J. and Walker, R.V. *Oral and Maxillofacial Trauma*. Philadelphia, W.B. Saunders Co., 1991.

9. Knight, J.S. and North, J.F. The classification of malar fractures: an analysis of displacement as a guide to treatment. *Br J Plast Surg* 13:325-339, 1961.

10. Rowe, N.L. and Killey, H.C. *Fractures of the facial skeleton*. Edinburgh, Livingstone, 1968.

11. Yanagisawa, E. Symposium on maxillofacial trauma II. Pitfalls in the management of zygomatic fractures. *Laryngoscope* 83:527-546, 1973.

12. Larsen, O.D. and Thomsen, M. Zygomatic fractures I. A simple classification for practical use. *Scand J Plast Reconstr Surg* 12:55-58, 1978.

13. Zingg, M. et. al. Classification and treatment of zygomatic fractures: A review of 1025 cases. *J Oral Maxillofac Surg* 50:778790, 1992.

14. Ogden, G.R. The Gillies method for fractured zygomas. *J Oral Maxillofac Surg* 49:23-26, 1991.

15. Quinn, J.H. Lateral coronoid approach for intraoral reduction of fractures of the zygomatic arch. *J Oral Surg* 35:321-322, 1977.

16. Karlan, M.S. and Cassisi, N.J. Fractures of the zygoma. *Arch Otolaryngol Head Neck Surg* 105:320-327, 1979.

17. Prendergast, M.L. and Wildes, T.O. Evaluation of the orbital floor in zygoma fractures. *Arch Otolaryngol Head Neck Surg* 114:446-450, 1988.

18. Davidson, J., Nickerson, D. and Nickerson, B. Zygomatic fractures: comparison of methods of internal fixation. *Plast Reconstr Surg* 86:25-32, 1990.

19. Finlay, P.M., Ward-Booth, R.P. and Moos, K.F. Morbidity associated with the use of antral packs and external pins in the treatment of the unstable zygomatic complex. *Br J Oral Maxillofac Surg* 22:18-23, 1984.

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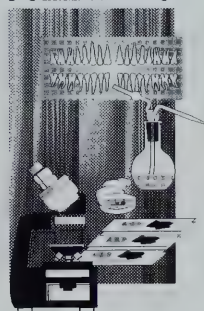
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Pediatric Mandibular Fractures Treated By Rigid Internal Fixation

Gordon B. Wong, M.Sc., DDS

Sault Ste. Marie, Ont.

ABSTRACT

Mandibular fractures in the pediatric patient population are relatively uncommon. These patients present with their own unique treatment requirements. Most fractures have been treated conservatively by dental splints. Closed reduction techniques with maxillomandibular fixation (MMF) in very young children can pose several concerns, including cooperation, compliance and adequate nutritional intake. Rigid internal fixation of unstable mandibular fractures using miniplates and screws circumvents the need for MMF and allows immediate jaw mobilization. At major pediatric trauma institutions, there has been an increasing trend toward the use of this treatment when open reduction is necessary. This article presents a report of a five-year-old child who presented with bilateral mandibular fractures and was treated by rigid internal fixation and immediate mandibular mobilization.

SOMMAIRE

Chez les enfants, les fractures mandibulaires sont relativement peu fréquentes, mais le cas échéant, chaque patient exige des traitements particuliers. La plupart du temps, le dentiste opte pour le traitement traditionnel et

pose une attelle. Avec les très jeunes enfants, les techniques de réduction à peau fermée avec un fixateur intermaxillaire peuvent causer des problèmes de collaboration, de docilité et d'alimentation. Par contre, la fixation interne rigide des fractures mandibulaires instables à l'aide de miniplaques et de vis permet de se passer du fixateur intermaxillaire et rend la mâchoire immédiatement mobile. Dans les institutions où l'on traite les enfants affligés de traumatismes graves, on opte de plus en plus pour ce traitement lorsqu'une réduction chirurgicale s'impose. Dans cet article, on présente le cas d'un enfant de cinq ans avec des fractures mandibulaires bilatérales traitées de cette façon.

Introduction

Mandibular fractures in children under five years of age are relatively uncommon. In their prospective study of 1,188 facial fractures, Carroll et al¹ reported an incidence of facial fractures of 1.4 per cent in the zero to five years of age group. The incidence of mandibular fractures in children under 10 years of age has been reported as 1.78 per cent,² 4.5 per cent³ and six per cent,⁴ while, more recently, Kotilainen et al⁵

found a fracture incidence of 3.7 per cent in children under 15 years of age. This report presents a case of bilateral mandibular fractures in a five-year-old patient who was treated by rigid fixation and allowing immediate mandibular movement.

Report of a Case

A five-year-old white female was admitted to the Sault Ste. Marie General Hospital emergency department on December 5, 1991, after she had been struck by a truck while running across the street in front of her home and dragged for several hundred yards. She had no loss of consciousness. On initial assessment by the department of general surgery, the girl showed no other system injuries besides multiple mandibular fractures. Her medical history was unremarkable. Her physical examination was normal and she had no heart murmurs. All routine laboratory investigations were within normal limits.

Clinical examination showed a well-nourished child, who was alert, awake and well-oriented in three dimensions, but in moderate distress. The facial bones, including the orbital rims, nasal bones, zygoma and zygomatic arches were normal. The patient had full extraocular movement and her pupils were equal and reactive to light and accommodation. Extraorally,

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9



Fig. 1: Extraoral frontal view with patient induced under general anesthesia, showing marked mandibular deviation to the left side.

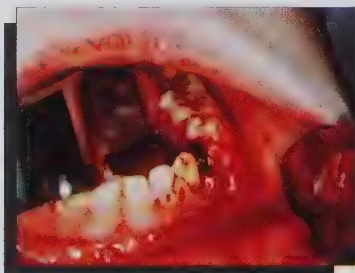


Fig. 2: Intraoral view of the left parasymphysal area, showing a significant gingival laceration between #73 and #74 and a marked step in the occlusion. Both proximal and distal segments were excessively mobile.

the mandible was markedly deviated to the left side (**Fig. 1**). Intraorally, the maxilla was stable. In the mandible, there was a significant gingival laceration between #73 and #74, with excessive mobility of the proximal and distal segments. There was an obvious step in the occlusion (**Fig. 2**). Left mental nerve paresthesia was not evident. She was unable to occlude her teeth. Dentally, she was missing all her primary upper central and lateral incisors. All other primary teeth were present, immobile and in good oral condition. All four first permanent molars were erupted. There was some minimal mobility of the lower right posterior segments on bimanual manipulation. Radiographic examination confirmed a significantly displaced left parasymphysal fracture and a moderately displaced right body fracture of the mandible (**Fig. 3**). There were no fractures of the mandibular condyles.

On December 6, 1991, the patient was taken to the operating room and general anesthesia was administered by nasotracheal intubation. Erich arch bars were ap-

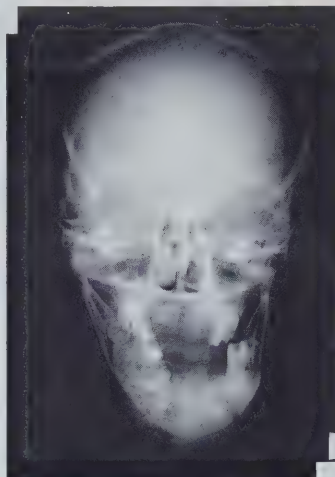


Fig. 3: Posterior-anterior view of the skull and facial bones, showing a significantly displaced left parasymphysal fracture of the mandible, and a moderately displaced right posterior body fracture of the mandible through the lower right second molar follicle.

plied to the primary cuspid and molar teeth in each quadrant. The severely displaced left parasymphysal fracture was reduced in a closed procedure, but was obviously still unstable. The occlusion was still skewed to the left side after placement of the arch bars. The right body fracture was then exposed intraorally using a buccal vestibular incision along the right external oblique ridge. It was noted to extend posteriorly from the second molar follicle and ran obliquely anteriorly and inferiorly to the second primary molar area. The lingual cortex along the distal tooth-bearing segment was significantly displaced to the lingual aspect, with a portion of the inferior border still intact. The segments were torqued until adequate reduction was achieved. The primary occlusion was then established and temporary MMF was applied to the arch bars using 25-gauge stainless steel wire loops. A buccal vestibular incision was made in the left parasymphysal area, and exposure of the fracture and left mental nerve was performed. The left proximal segment was flared slightly to the buccal aspect. A five-hole mini-fragmentation plate was adapted to the lower border beneath the left mental nerve and rigidly fixed across the fracture site with



Fig. 4: Intraoral view of the open reduction and rigid internal fixation of the left parasymphysal fracture using a mini-fragmentation plate adapted to the lower border of the mandible. Note the intact left mental nerve exiting from the foramen above the fixation plate and distal to the reduced fracture site.

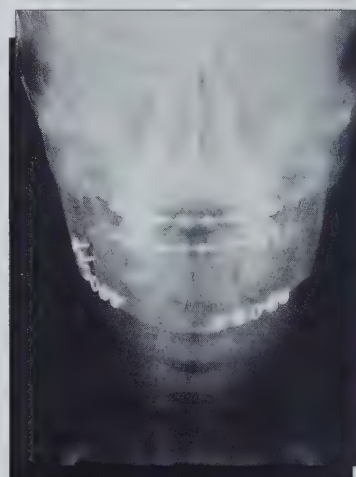


Fig. 5: Postoperative posterior-anterior view of the mandible, showing both mini-fragmentation plates positioned at the inferior border in the left parasymphysal and right body areas of the mandible. The pre-injury primary occlusion is maintained by Erich arch bars and elastic traction. The patient was allowed immediate mandibular mobilization after surgery.

four 6.0 mm screws (two screws were placed on either side of the fracture line) (**Fig. 4**). The right body fracture was rigidly fixed in a similar fashion, using a six-hole mini-fragmentation plate adapted to the inferior border of the mandible. These screws were placed percutaneously through the right masseter muscle using a small incision at the right angle of the jaw. All screws were placed monocortically, and care was taken not to drill beyond the cortical width because of the proximity of the developing permanent teeth. The temporary MMF was then released and the occlusion was checked and found satis-

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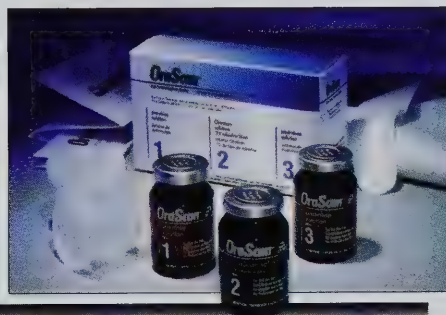
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factory. The intraoral wounds were cleansed with Bacitracin solution and closed in one layer using Vicryl sutures (Ethicon). The extraoral incision was closed with a single nylon (Ethicon) suture. The patient was placed in elastic traction and the anesthetic was reversed. Post-operative radiographs were taken the day after surgery (Fig. 5). The patient had an uneventful recovery and was discharged in stable condition two days after surgery. She was followed up at regular intervals over the subsequent six weeks. At that time the arch bars were removed under ketamine dissociative anesthesia. This patient will be followed up at regular yearly visits.

Discussion

Of the various etiologies of facial fractures in children, the largest group of injuries are the result of falls, followed by motor vehicle accidents.^{1,6} Interestingly, Carroll et al¹ reported that of all the injuries attributable to falls, over half occurred in the under five years of age group, while a similar observation was seen by Kotilainen et al⁵ in children under seven years of age. Motor vehicle accidents increased after six years of age, and were usually related to bicycle injuries.^{1,6} Other studies have reported motor vehicle accidents as the predominant cause of pediatric facial fractures.⁷⁻⁹ However, Seigel et al¹⁰ found that alterations were the most common cause of mandibular fractures in children, with child abuse being recognized as a frequent cause of injury in all the age groups studied. Sporting injuries and assaults were reported to a lesser degree.^{1,5,8,9}

In comparison to other fractures within the pediatric facial skeleton, the relative frequency of involvement of the mandible was significant in one study of Greek children, which reported it to be 83.7 per cent,⁸ while Carroll et al¹ and Posnick⁹ showed incidences of 26.5 per cent and 31.8 per cent, respectively. Dentoalveolar fractures were variably reported at 65 per cent,¹ 12.2 per cent⁸ and as low as 5.4 per cent.⁹ Fractures of the middle third of the face including the zygoma were very low.^{1,8,9} Pos-

nick⁹ included a high incidence of nasal fractures (37.7 per cent). The most common site of fracture in the mandible was the condyle, followed in relative frequency by the body^{1,8} and the parasymphysis and symphysis.⁹ A high occurrence of concomitant injuries in this age group has been noted, including intra-abdominal, orthopedic and neurosurgical injuries.^{6,7,9} Because of the greater comparative size of the cranium to the facial bones, the relatively protected mandible is injured only after the exposed cranium, along with the thoraco-abdominal cavity and extremities, have sustained trauma.

The standard treatment for pediatric mandibular fractures remains the establishment of the primary teeth in their pre-injury occlusion, the reduction and fixation of the bony segments in their pre-injury position and stabilization until bony union occurs.⁹ Treatment in this age group has been predominantly conservative,¹ with many advocating closed reduction techniques using lingual dental splints held by circummandibular wires.^{6,7,11} The significant advantage of this technique is that it eliminates the need for open reduction wire fixation techniques and the associated high morbidity to developing tooth follicles. The lingual flange prevents vertical and horizontal fracture displacement. The child undergoes only one surgical procedure for reduction and fixation, and can be allowed immediate jaw mobilization without MMF.¹¹

Almost all pediatric mandibular fractures are amenable to closed reduction and MMF.^{8,12} MMF in the treatment of mandibular fractures in a pediatric patient may create several concerns. First, the lack of patient cooperation may cause a lack of tolerance for having the jaws wired together, and a lack of compliance in adequate oral hygiene. Secondly, the lack of adequate nutritional intake and subsequent weight loss would be a major concern, especially in an age group of patients where the metabolic demands are high.¹³ In consideration of these concerns, there has been a trend to shorter periods of immobilization after pediatric

jaw fractures. Because of rapid callus formation in children, Amaratunga^{3,13,14,15} has been advocating only two weeks of immobilization in this age group. In the complete primary dentition, MMF can be readily applied using arch bars and circumdental wires. In the mixed dentition stage, the difficulty of placing wires and arch bars around primary teeth whose roots are in various stages of resorption can make immobilization more difficult but not impossible.^{9,10,13}

Open reduction techniques using intraosseous wire fixation and MMF were applied only when the fracture sites were excessively displaced.^{6,7,8} The use of monocortical screws and miniplate fixation was initially reported as either being too difficult to place,⁶ or reserved for older age groups.⁷ Recently, there has been an increasing trend toward the use of miniplate and screw fixation in pediatric facial fractures requiring open reduction.¹⁶ Posnick et al¹⁶ reported that these rigid internal fixation techniques were the most common method of stabilization in 63 per cent of cases, followed by wire fixation in 16 per cent of cases. The rigid fixation of pediatric mandibular fractures circumvents the need for MMF and its associated concerns. The need for tracheostomy in the patient with multiple system injuries may be avoided, along with the concern of TMJ ankylosis in cases of multiple jaw injury. The patient is able to receive adequate nutritional intake and has improved oral hygiene. In addition, there is a definite psychological advantage in cooperation, compliance and comfort. The disadvantage of any open reduction procedure with internal fixation in the pediatric patient is the increased possibility of damage to the developing tooth buds. Nixon and Lowes¹⁷ have reported this complication with both wire and screw fixation, causing the failed eruption of the permanent tooth. The developing canine tooth was the most likely tooth to be damaged because of its presence and position at the thicker inferior border of the mandible, where holes must be drilled for internal fixation techniques.



The basic concepts of rigid internal fixation necessitate the accurate anatomical reduction of the fracture segments prior to the placement of the fixation plates. This can be achieved by the use of compression plate fixation, where the bone beneath the plate is compressed together during screw tightening, thereby allowing primary bone healing to occur. Posnick⁹ states that this type of bone healing is not necessary in achieving the pre-injury anatomy in the pediatric facial fracture. In mandibular fractures, noncompression plating with arch bar application used as a tension band effect, in addition to a soft diet and jaw mobilization, was quite adequate. Prolonged MMF can be avoided. **Fig. 4** shows the presence of a small osseous gap after the placement of noncompression plating. Once the pre-injury occlusion has been established, this degree of osseous gap at the fracture site is less of a consequence in the bony healing of pediatric mandibular injuries.

The long-term sequelae in growing bones are still unclear with these techniques. However, Posnick¹⁸ views a growing bone as a fluid and not as cement, so that once the growth centres are not disturbed by trauma or surgery, he predicts very little harm would result in the growing bone from the placement of a wire, miniplate or screw. Marx¹⁹ has commented that fixation plates in pediatric patients may actually become encased in new bone, an observation that has been supported by Posnick.¹⁸ The indication to remove bone plates applied to a fractured pediatric mandible after bone healing, and whether their retention may cause growth disturbances, is still uncertain. Indeed, a second surgical procedure to remove a fixation plate would disrupt the overlying periosteum and soft tissues, and could conceivably induce further scar formation and hinder growth. Posnick⁹ prefers to leave these fixation devices in place and regularly monitor these patients. These new surgical fixation techniques have many advantages for the specific needs of the pediatric mandibular trauma patient, but long-term follow-up and monitoring of the ef-

fects on facial growth are still required. ■

Dr. B. Wong is in private practice, specializing in oral and maxillofacial surgery, and on the active dental staff of Sault Ste. Marie General Hospital, Sault Ste. Marie, Ontario.

Reprint requests to: **Dr. Gordon B. Wong**, 350 Queen Street East, Sault Ste. Marie, Ontario P6A 1Z1.

References

1. Carroll, M.J., Hill, C.M. and Mason, D.A. Facial fractures in children. *Br Dent J* 163:23-26, 1987.
2. Ellis, E., Moos, K.F. and El-Attar, A. Ten years of mandibular fractures: An analysis of 2,137 cases. *Oral Surg* 59:120-129, 1985.
3. Amaratunga, N.A. de S. Mandibular fractures in children — a study of clinical aspects, treatment needs, and complications. *J Oral Maxillofac Surg* 46:637-640, 1988.
4. Bochlogyros, P.N. A retrospective study of 1,521 mandibular fractures. *J Oral Maxillofac Surg* 43:597-599, 1985.
5. Kotilainen, R., Karja, J. and Kullaa-Mikkonen, A. Jaw fractures in children. *Int J Ped Otorhinolaryngol* 19:57-61, 1990.
6. Jones, K.M., Bauer, B.S. and Pensler, J.M. Treatment of mandibular fractures in children. *Ann Plast Surg* 23:280-283, 1989.
7. Thaller, S.R. and Mabourakh, S. Pediatric mandibular fractures. *Ann Plast Surg* 26:511-513, 1991.
8. Styliogianni, L., Arsenopoulos, A. and Patrikiou, A. Fractures of the facial skeleton in children. *Br J Oral Maxillofac Surg* 29:9-11, 1991.
9. Posnick, J.C. The role of plate and screw fixation in the treatment of pediatric facial fractures. In: M.J. Yaremchuk (ed), *Rigid Fixation of the Craniomaxillofacial Skeleton*. England, Butterworth, 1992, pp. 396-419.
10. Siegel, M.B., Wetmore, R.F., Potsic, W.P. et al. Mandibular fractures in the pediatric patient. *Arch Otolaryngol Head Neck Surg* 117:533-536, 1991.
11. Calderon, S., Weiss, N. and Garlick, J.A. A technique for the treatment of mandibular body fractures in young children. *Int J Oral Maxillofac Surg* 18:83-84, 1989.
12. Turvey, T.A. and Kendell, B. Management of facial fractures in the growing patient. In: R.J. Fonseca and R.V. Walker (eds.), *Oral and Maxillofacial Trauma*, Vol. 2, Philadelphia, Saunders, 1991, pp. 722-753.
13. Amaratunga, N.A. de S. Mandibular fractures in Sri Lankan children: A study of clinical aspects, treatment needs and complications. *J Dent Child* 59:111-114, 1992.
14. Amaratunga, N.A. de S. The relation of age to the immobilization period required for healing of mandibular fractures. *J Oral Maxillofac Surg* 45:111-113, 1987.
15. Amaratunga, N.A. de S. Mouth opening after release of maxillomandibular fixation in fracture patients. *J Oral Maxillofac Surg* 45:383-385, 1987.
16. Posnick, J.C., Well, M. and Pron, G. Pediatric facial fractures: evolving patterns of treatment (Abstract). *J Oral Maxillofac Surg* 49(suppl 1):74-75, 1991.
17. Nixon, F. and Lowey, M.N. Failed eruption of the permanent canine following open reduction of a mandibular fracture in a child. *Br Dent J* 168:204-205, 1990.
18. Posnick, J.C. Personal communication, 1993.
19. Marx, R.E. 15th Annual Oral and Maxillofacial Pathology Review, Miami, Florida, January 18-22, 1992.

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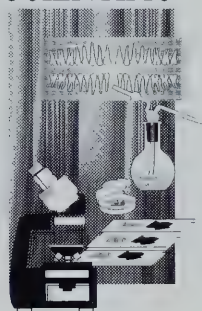
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SCIENTIFIC



Clinical Observations On A Newly Designed Electronic Apex Locator

W.H. Christie, DMD, MS, FRCD(C)

M.D. Peikoff, DMD, M.Sc.D., FRCD(C)

Winnipeg

C.E. Hawrish, BA, DDS, M.Sc., MRCD(C)

Edmonton

ABSTRACT

The introduction of alternative electronic principles and circuitry has produced the next generation of electronic apex locators, which have fewer clinical limitations and greater ease of use, on a routine basis, than their predecessors. The history of how the electronic apex locator was developed over the past 30 years and the limitations of the machines designed on earlier principles are reviewed. Clinical examples of root canal systems measured using a newly-designed, frequency-dependent apex locator are presented in order to illustrate the spectrum of cases that can be read. All measurements were made on canals irrigated previously with electro-conducting solutions, which would have made readings from earlier machines problematic. Single-rooted and molar teeth as well as teeth with vital tissue in the root canal system or with necrotic pulp tissue and periapical lesions have been treated with equal ease and results. The electronic apex locator is being advocated to supplement instrumentation technique and to improve the identification of the apical terminus of the root canal system. The routine use of these devices is advocated to ensure an accurate placement of root canal fillings rather than to eliminate the need for radiographs.

SOMMAIRE

Grâce aux principes et aux circuits nouveaux en électronique, une autre génération de localisateurs d'apex électroniques est née, présentant moins de restrictions cliniques et étant d'une utilisation plus facile que ceux de la génération précédente. Dans cet article, on raconte comment, au cours des trente dernières années, a été élaboré le localisateur d'apex électronique tout en indiquant les restrictions des appareils conçus plus tôt. Afin d'illustrer tout ce que les nouveaux appareils sélectifs peuvent faire, on présente toute une série de cas cliniques dans lesquels on les a utilisés pour mesurer le système de canaux radiculaires. Toutes les mesures ont été prises sur des canaux irrigués au préalable avec des solutions électroconductrices, ce qui aurait procuré des résultats plutôt discutables naguère. On a réussi à traiter avec autant de facilité que d'efficacité des dents avec une seule racine et des molaires ainsi que des dents avec des tissus vitaux dans les canaux radiculaires ou avec des tissus pulpaux névrosés et des lésions périapicales. On recommande donc le localisateur d'apex électronique pour améliorer les manoeuvres instrumentales et repérer plus facilement le bout apical du système radiculaire. On en recommande l'utilisation de façon régulière plus pour

assurer la précision des obturations des canaux radiculaires que pour éliminer les radiographies.

Introduction

Electronic devices to estimate the length of a canal and to locate the position of the apical foramen have made significant progress since the first instrument was designed by Sunada¹ in 1962. These first electronic instruments attempted to measure resistance between the periodontal ligament and the oral mucosa, using a principle that was first reported in experiments done by Suzuki² in 1942. Since that time, the design of these early instruments, which was originally reported by Dr. N. Inoue,³ has gradually evolved as advances in electronics were incorporated.

Electronic apex locators based on the resistance principal have a number of clinical limitations.⁴⁻¹⁶ Length estimates may be inaccurate or unreliable if blood or pus is present in the canal.¹⁵ Irrigation with sodium hypochlorite or anesthetic solution will also affect the readings.^{17,18} Tissue has to be removed and the canals dried or, at the very least, a nonconducting fluid such as hydrogen peroxide or R.C. Prep (Premier Dental Products) must be used as an irrigant.

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9



Many of these instruments have to be calibrated for each patient.

There has been a quantum leap in both principle and design in the past few years. Some recent models of electronic apex locators use the principle of impedance in a canal. The impedance-type instruments are not as affected by electro-conducting fluids as other locators, but do require special insulated measuring probes, which limit the smallest diameter of the canal to be measured.^{19-21,17}

However, the authors feel that the new frequency-dependent apex locators seem to hold the most promise and convenience for routine clinical use.²² A number of companies, primarily in Japan, have introduced this modification of the Sunada principle into their instruments. This new generation of apex locators has several advantages over previous devices. The use of these instruments, which are more reliable even in wet canals, provides more accurate information on a working length estimation that is so critical to success in root canal therapy.

Historical Perspective

The concept of using electronic techniques to determine root canal working length was first proposed by Custer²⁴ in 1918. In 1960, Gordon²⁵ was the first to report using a device that employed an electric current to determine canal length. The principle on which most electronic apex locators function today is based on the *in vivo* experimental work on iontophoresis in dogs' teeth by Suzuki.² Based on Suzuki's findings, Sunada¹ confirmed that, in humans, the resistance between the periodontal ligament and the oral mucosa is a relatively constant value. He described a device that incorporated an ohmmeter to measure the root canal length *in vivo* on 124 teeth. The clinical use of the "Endometer" (Dent-o-tronics), a device based on the principle described by Sunada, was reported by Cash.²⁶ Inoue^{3,27} described a modification that incorporated the use of an audiometric component that permitted the measurement device to relate canal depths to the operator via low frequency audible sounds. The

unit described by Inoue, "The Sono-explorer" (Electronic-Dent Inc.) was built in Japan and was introduced in the United States in 1971. Numerous clinical studies have been performed to determine its accuracy.^{7,8,13,14,16} Although the accuracy of the Sono-Explorer was proven in clinical studies, some dentists found the device difficult to use because it required calibration before use as well as the synchronization of two audio tones. By 1975, newer "second generation" units like the "Neosono" (Amadent) and many other resistance-type apex locators became available. They had improved circuitry, were more compact, and were simpler to operate.²⁸ These innovations simplified the electronic method of determining the working length.

Sunada's theory, based on biological characteristics, was used for many years to explain the principle of electronic apex localization. A number of studies in the last decade re-evaluated the phenomenon associated with electronic apex location and determined that the Sunada theory was inaccurate.^{19,29-}

³⁵ These studies proposed that the phenomenon, as associated with electronic apex location, was physical, and that it was based on electric principles unrelated to the biological characteristics discussed by Sunada. From these studies, two newer "third generation" types of apex locators were developed. The first was the impedance-type apex locator, the "Endocator"^{20,21,32,37} (Hygienic Corp.). These devices operate on the principle that the tooth is a long, hollow tube closed over at the end (i.e. the apex of the root canal). The tooth exhibits an increasing electrical impedance across the walls of the root canal, which is greater at the apex than in the coronal portion of the root canal.^{20,37} Impedance-type apex locators require the use of a coated probe (instead of a regular 'K' file) that is carefully matched to canal diameter. The device requires careful calibration before use and good patient contact with the hand-held electrode. These instruments use more electrical current than resistance-type locators, and may cause discomfort, at

times, to patients who are not anesthetized.

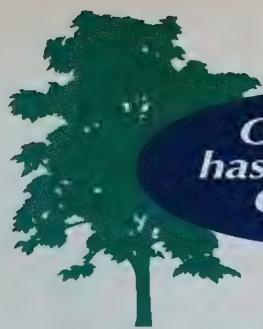
The second type of third-generation instrument is the frequency-dependent apex locator. Both the "Root ZX" (J. Morita Corporation) and the "Endex" (Osada Electric Co.) locator belong in this category. The Root ZX compares the ratio of the difference between a high (8.0 kHz) and a low (400 Hz) frequency signal. In practice, the difference in impedance between the selected frequencies is relatively unaffected by the electrical properties of the solution as the conducting probe progresses down a root canal system.

Due to the microchip circuitry built into the instrument, a digital read-out is produced only when the instrument tip approaches the apical foramen. Frequency-based units like the Root ZX are easier to handle because they use ordinary K files in wet canals, which may contain an electro-conductive fluid.

Accuracy of Apex Locators

The anatomy of the root apex is very complex in some cases. Because of a continued deposition of cementum throughout life, some anatomical changes take place with aging. Studies on the distance from the apical constriction to the radiographic or anatomic apex show considerable variation.²³ Canals frequently deviate to the vestibular or lingual, and their apical foramen does not always coincide with the radiographic apex. Studies to measure the accuracy of apex locators have been carried out by several methods. The *in vivo* methods used include anatomic^{7,16,37} (placement of a file followed by securing of the file in a fixed position and extraction of the tooth), visual technique^{6,13,18,37,38,40,46} (as above but measured by microscope), or radiography^{4,8,9,11,12,14,16,28,36} (placement of a file and confirmation by radiographs). The latter technique may be the most practical but is the least accurate.⁹ In addition, there have been several *in vitro* studies.^{5,17}

Since the '70s, many accuracy studies have been done on a wide variety of apex locators. McDonald recently reviewed these studies.³⁹



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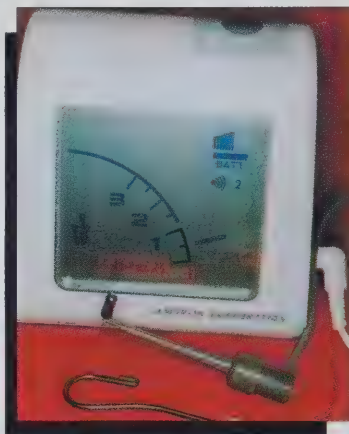


Fig. 1: Root ZX frequency-dependent apex locator used in the clinical trials.

The second generation of devices are between 83 per cent and 93.4 per cent accurate, (generally to within ± 0.5 mm). To date, there are few published studies on the accuracy of the third-generation frequency-dependent apex locators capable of measuring a canal that has been irrigated with sodium hypochlorite,^{40,43-45} but they appear to be comparable, at 89 per cent accuracy.

Clinical Observations

The authors have used earlier models of electronic apex locators with varying degrees of confidence and reliability. Recently, we received a newly-designed, frequency-dependent, Root ZX electronic apex locator from the J. Morita Corporation (**Fig. 1**). The "Endex" from Osada purportedly operates on similar principles.

According to the manufacturer's instructions provided with the Root ZX, previous stipulations with regard to measuring the canal length are no longer necessary. Canals do not have to be dried — in fact, measurements should be made in a wet condition. Furthermore, electrolytes, like sodium hypochlorite, pus or blood, appear to have little effect on the reading. It is unnecessary to remove all tissue at the apex, intrapulpal anesthetic solution does not have to be flushed out and necrotic canals can be irrigated with sodium hypochlorite before measurement of the canal is attempted. Very fine files, as small as #08, may be used to measure in a canal. In addition, the Root ZX is

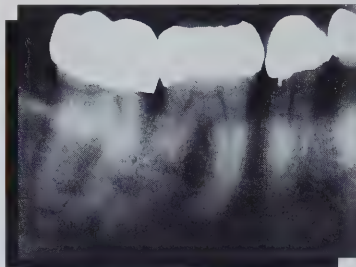


Fig. 2: Mandibular first molar with distal root resorption and fine, curved mesial roots.

self-calibrating as it is turned on, while the Endex must be calibrated for each new patient.

Naturally, when a new instrument is introduced, one is initially sceptical that the previous limitations of earlier models have been completely resolved. Our use of the Morita Root ZX, a third-generation frequency-dependent apex locator, has proven a positive experience in this respect. The following case histories are chosen only as examples of the ease of employment of this newly designed apex locator. Studies on the accuracy of the root apex locator over a varying degree of circumstances are pending.

Case 1

This first case report depicts the first tooth treated in our office (WHC) using the Root ZX. The radiograph of the permanent first mandibular molar (**Fig. 2**) shows a tooth with a deep-based amalgam restoration and recession of the pulp chamber. Of concern was the external resorption of the distal root to a point where nearly one half the length was lost. Sclerotic bone seemed to have replaced the root space, but previous radiographs were not available for comparison. Mandibular tori were present and did not appear to affect the molar roots. Electrical pulp tests were vital, but the readings were higher than for adjacent teeth. Although there were no symptoms from the tooth at the time, a diagnosis of irreversible pulpitis with external root resorption was made and elective nonsurgical root canal therapy was advised. After local anesthetic was administered, access was made through the large amalgam restoration. Pulp tissue in the



Fig. 3: Apex locator readings with two #25 "K" files in distal canals and two #08 "K" files measuring mesial canals.

chamber was fibrotic with little hemorrhage until the distal roots were broached. The mesial canals were fine and curved, but could be negotiated with fine #08 files. The distal canals were doubled in a figure-eight shape, but were short and larger in diameter. These canals could be negotiated with #25 files and were irrigated with diluted (three per cent) sodium hypochlorite solution to control apical hemorrhage. Following the manufacturer's directions, only the chamber was dried with a fine suction and no effort was made to dry the canals or to remove all tissue or blood at this time. The appropriate file was inserted into each canal, one at a time, and connected to the Root ZX instrument lead.

The alternate lead had been placed on the patient's opposite lip. The file was carefully advanced until the display bar reached "0.5" from the apex and the tone indicated that apex was reached. The stop was adjusted and instrument removed so the next canal could be measured in the same fashion. All four files were then re-placed into their respective canals to length and a confirmation radiograph exposed (**Fig. 3**).

Despite the large and complicated shape of the distal canal, the point of resorption was confirmed on this radiograph. The mesial canals were very fine, but still produced reliable readings on the instrument. Remaining vital tissue was removed 0.5 mm short of this reading and calcium hydroxide was placed at the distal apices to inhibit the resorptive process. At a subsequent appointment, instrumentation and obturation at these



Fig. 4: Maxillary lateral incisor with draining periapical area which was measured with a #25 file size at the radiographic apex after irrigation and debridement.

lengths produced an ideal root canal fill-ing.

Case 2

The next example of working length determination illustrates the benefit of the instrument where initial radiographs may be unreliable. Tooth #12, a maxillary lateral incisor, had a history of abscess and had been left open to drain by the referring dentist. The referring radiograph showed a radiolucent area and appeared slightly elongated. Symptoms had resolved and a chronic apical periodontitis was diagnosed. Rubber dam was placed and straight line access was improved before the debris was rinsed from the canal. At this time, the mesiovestibular veneer was loosened and removed. In retrospect, this may have further altered our reference point. The canal was irrigated with copious amounts of sodium hypochlorite and a #15 file was used to remove all debris from the chamber. When the Root ZX apex locator was connected and advanced down the canal, the instrument registered "apex" at least 2.0 mm before our estimated length. After more irrigation, measurements were made again with #20 and #25 instruments with the same results. At this time, a radiograph was exposed at the "apex" reading (**Fig. 4**). This was judged to be at the radiographic apex.

At a subsequent appointment, instrumentation was completed



Fig. 5: Preoperative radiograph of maxillary first molar with paste filling obscuring the root canal systems.

1.0 mm short of this point. Had the estimated length been used prior to preliminary debridement and a radiograph, the instrument would have appeared to be through the foramen by more than 2.0 mm.

Case 3

The apex locator can also be used on pulpless molar canals similar to the retreatment case demonstrated in **Fig. 5**. This patient was referred for treatment of the first molar which appeared to have had a paste pulpotomy treatment performed some years previously in Europe. The chronic periapical area had become symptomatic, but on opening the chamber for drainage, the referring dentist could not locate all canals. After rubber dam placement in our offices, the chamber was carefully cleared of paste remnants with a DG 16 explorer and #2 round bur. After using copious irrigation, the grooves on the floor of the chamber were explored with fine files until three canals could be negotiated into the mid-root area only. A #2 Gates Glidden bur was used to flare the three canal orifices and irrigation was used again. Fluid was aspirated from the chamber and the canals were left wet for measurement. The palatal canal was open and easily negotiated with a #15 file, except for the apical tip, which had to be curved back to the vestibular. A reading of 'through the apex' appeared on the apex locator and the silicone stop was adjusted just short of this point. The mesiobuccal canal was negotiated with a curved #10 file until the apical reading was noted on the instrument. The working length estimation of the distobuccal canal was a surprise, however. A #10 file



Fig. 6: Radiograph of the apex locator length instruments in place showing the distobuccal root apex longer than was first suspected.

was carefully negotiated down the canal to an estimated length (similar to the mesial canal length) with no response on the instrument. After reviewing the radiograph again, a 25 mm length #08 file was teased another 4.0 mm down the canal until readings appeared on the scale. The length was adjusted on the silicone stop at the 'apex' reading and the other files replaced for a radiograph (**Fig. 6**). The change in the angle of the X-ray helped to show the extra curve in the distal root tip and also suggested the presence of a second mesiobuccal root apex. Canals were instrumented and their lengths reconfirmed using the apex locator and master apical file size instruments before obturation.⁴² Even at this point, corrections can still be made in canals that may be ledged short or foramen opened due to resorption or straightening of the curvature of the canal.

Case 4

In this case report, the apex locator was used to help calculate the working lengths of canals containing vital tissue, with varying results. The two teeth, as seen on the radiograph, had supported a fixed bridge for 20 years and had fractured near the gingival level. They were treatment planned for post and core build-up before the fabrication of a new bridge. Teeth 12 and 21 tested vital with no periapical involvement. Histologic examination of the pulp tissue confirmed pulp fibrosis and dystrophic calcifica-





Fig. 7: Maxillary central and lateral incisor as measured with the apex locator immediately after fibrous tissue had been broached from each canal.



Fig. 8: Root canal obturation of the previous example at the apical foramen level and ready to receive post and core reconstruction.

tions. After routine local anesthesia and rubber dam placement, access was made into each pulp chamber and debris was flushed with diluted sodium hypochlorite.

A #15 instrument was used on the lateral incisor and readings at 'apex' were made. Because the radiographic diameter of the central incisor appeared larger, a #25 file was used to measure canal length. A radiograph was exposed to include both teeth on one film (**Fig. 7**). The file tip on the lateral incisor appeared through the apical foramen by 1.0 mm and was adjusted at this point. Despite the appearance of a fine canal at the apex on the radiograph, perhaps a larger file should have been used to measure the foramen. The central incisor instrument was about 0.5 mm from the radiographic apex, which corresponded to a digital tactile sense of the anatomic foramen. Both canals were instrumented and obturated at the adjusted lengths with satisfactory results (**Fig. 8**).

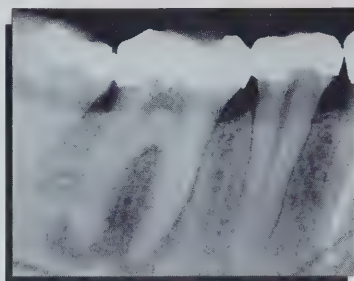


Fig. 9: Mandibular first molar with large periapical radiolucency requiring root canal therapy.

Case 5

There are several points that can be illustrated by the following case. First, it will dispel any doubt as to whether the Root ZX is effective in a multi-rooted tooth with a considerable radiolucent lesion surrounding the apex and secondly, when the instrument read "apex," it was in this case more accurate than the operator's (MDP) tactile sense.

The pre-operative X-ray (**Fig. 9**) demonstrates a lesion around both the mesial and distal roots of tooth 46. Access was gained to the pulp chamber, refined, #10 files were placed in the canals and connected to the instrument lead. Each file was advanced down the canal until the "0.5 from the apex" bar was reached on the Root ZX indicator. The distobuccal and distolingual instruments were measured at this length. However, on the mesiobuccal and mesiolingual, the operator continued to advance the instruments about 1.0 mm past the "correct" reading on the machine, because this had a digital tactile sense more like the apex.

When the radiograph was taken at this point (**Fig. 10**) to verify these lengths, the distobuccal and distolingual lengths were confirmed, but the mesiobuccal and mesiolingual instruments appeared on the radiograph to be 1.0 mm through the apex, which concurred with the Root ZX findings.

Discussion

These typical case selections illustrate that vital canals or teeth with necrotic pulp canals and periapical areas, anterior and posterior teeth, may be measured with reasonable confidence of ± 1.0 mm accuracy in a clinical situation. As

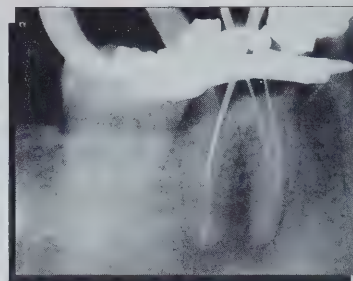


Fig. 10: Ideal length measurement on the distal root but the operator did not believe instrument reading on the mesial and opted for a clinical tactile-sense length which appears 2.0 mm beyond foramen.

well as in private practice, we have found the apex locator to be particularly useful in a teaching institution where the inexperienced student may be producing a less than optimum radiograph. The added information from the instrument reading may more quickly establish or help to correct an uncertain or changing working length.

When one is attempting to make an electronic working length estimation, it is important to match instrument size and canal diameter at the apical constriction as closely as possible. Errors in estimating the foramen position were infrequent when using the apex locator, and when they occurred, were usually due to a smaller instrument being used as the guide file in larger canals.

The authors have also used the electronic apex locator to reconfirm the canal length and position of the foramen to some effect with the master apical file after the canals have been tapered in the step-back preparation. However, double canals that have been shaped into wide figure eights gave variable readings until the probe tip passed through the apical constriction.

There is still a need for a radiograph during the instrumentation technique,⁴⁶ not only to confirm the lengths as calculated on the apex locator, but also to visualize curves and branches in the root canal system and locate the position of the apical foramen. Furthermore, when there are two canals in the same root, it is imperative for the operator to know if the canals ter-

minate at separate apices or if they join to form a common apical foramen.

The routine use of the apex locator, however, will help to reduce the number of radiographs needed to establish a working length and to reconfirm lengths. When the initial radiograph is elongated, an electronic estimation saves penetrating through the apex, and reduces tearing of the foramen.

There are a number of design improvements in the Root ZX measuring device as well. The liquid crystal display and integrated circuit chip is powered by five AA batteries. Power consumption is low and the batteries can last up to 100 hours. A continuous display on the LED face also shows the remaining amount of battery charge.

There is a single recessed main switch which, if forgotten, turns itself off after 20 minutes. This instrument will also calibrate itself after the file holder is attached to the measuring file and the lip clip is in position. On the subject of infection control, the file holder and contrary electrode can be autoclaved routinely and the rest of the machine is easily wiped down with disinfectant solutions. The use of an electronic apex locator on patients with electronic pace makers is contraindicated, however.

Conclusion

The working length of a root canal system is a dynamic measurement and may change during the process of instrumentation.^{41,42} It is often beneficial to be able to check working length at several points in the procedure without having to confirm it with a radiograph. Even after an initial working length has been determined, the practitioner is reluctant to use further X-rays to monitor changes in the canal length due to shortening of the curvature. The use of a reliable electronic apex locator can improve the quality of our endodontic treatment.

Ease of use, convenience and the accuracy of apex locators have improved with the new third generation of electronic devices. Instruments as small as #08 and #10 'K' files can be used with a greater degree of confidence. The pres-

ence of vital pulp or a periapical lesion seems to have little effect on the measurement. The canals may be irrigated with sodium hypochlorite or other electro-conducting solutions before measurements are made. Multirooted teeth may be measured *as long as the chamber is dried with suction*. Calibration of the Root ZX instrument is not required.

After a working length and the direction and amount of curvature have been determined on a radiograph, continuous monitoring is possible, thus eliminating a need for further radiographs. Trial lengths measured on elongated films were soon found to be too long before over instrumentation was done. Calculations of foreshortened lengths were corrected without the need of a second radiograph. Selection of instrument size to fit snugly in the canal at the foramen is important, as an instrument that is markedly smaller than the canal may often result in a reading that passes through the foramen. As with most electronic apex locators, teeth with divergent or open apices may still be a problem to measure using an electronic apex locator.

Readings that were short of the radiographic apex often proved to be at the anatomic foramen when the obturation was completed to that length. Root canal systems with a larger diameter than #25 should be read a little short to avoid tearing of the apex. Routine use of an electronic apex locator should increase the operator's confidence in the detection of variance in the anatomy, position and size of the apical construction and anomalies of the machine. This will result in a more accurate positioning of root canal fillings at the apical constriction and a higher degree of success in root canal therapy. ■

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Dr. Christie is an associate professor and section head of endodontics, faculty of dentistry, University of Manitoba.

Dr. Peikoff is an associate professor of endodontics, faculty of dentistry, University of Manitoba and has a private endodontic practice in Winnipeg.

Dr. Hawrish has a private endodontic practice in Edmonton.

Reprint requests to: **Dr. W.H. Christie**, Department of Restorative Dentistry, Faculty of Dentistry, University of Manitoba, 780 Bannatyne Ave., Winnipeg, Manitoba R3E 0W2.

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References

1. Sunada, I. New method for measuring the length of the root canal. *J Dent Res* 41:375-387, 1962.
2. Suzuki, K. Experimental study on iontophoresis. *J Jpn Stomatol* 16:411-417, 1942.
3. Inoue, N. An audiometric method for determining the length of root canals. *J Can Dent Assoc* 39:630-636, 1973.
4. Abbott, P.V. Clinical evaluation of an electronic root canal measuring device. *Aust Dent J* 32:17-21, 1987.
5. Becker, G.J., Lankeima, P., Wesselink, P.R. et al. Electronic determination of root length. *J Endodont* 6:876-880, 1980.
6. Berman, L.H. and Fleishman, S.B. Evaluation of the accuracy of the Neosono-D electronic apex locator. *J Endodont* 10:164-167, 1984.
7. Blank, L.W., Tenca, J.I. and Pelieu, G.B. Reliability of electronic measuring devices in endodontic therapy. *J Endodont* 1:141-145, 1975.
8. Busch, L.R., Chiat, L.R., Goldstein, L.E. et al. Determination of the accuracy of the Sono-explorer for establishing endodontic measurement control. *J Endodont* 2:295-297, 1976.
9. Chunn, C.B., Zardiackas, L.D. and Menke, R.A. In vivo root canal length determination using the Foramer. *J Endodont* 7:515-520, 1981.
10. Dahlin, J. Electronic measuring of the apical foramen: A new method for diagnosis and endodontic therapy. *Quintessence Int.* 1:13-22, 1979.
11. Trope, M., Rabie, G. and Tronstad, L. Accuracy of an electronic apex locator under controlled clinical conditions. *Endodont Dent Traumatol* 1:142-145, 1985.
12. Tidmarsh, B.G., Sherson, W. and Stalker, N.L. Establishing endodontic working length: a comparison of radiographic and electronic methods. *NZ Dent J* 81:93-96, 1985.
13. O'Neill, L.J. A clinical evaluation of electronic root canal measurement. *Oral Surg* 38:469-473, 1974.





14. Seidberg, B.H., Alibrandi, B.V., Fine, H. et al. Clinical investigations of measuring working lengths of root canals with electronic device and digital-tactile sense. *JADA* 90:379-387, 1975.
15. Suchde, R.V. and Talim, S.T. Electronic Ohmmeter: An electronic device for the determination of the root canal length. *Oral Surg* 43:141-150, 1977.
16. Plant, J.J. and Newman, R.F. Clinical evaluation of the Sono-Explorer. *J Endodont* 2:215-216, 1976.
17. Fouad, A.F. and Krell, K.V. An in vitro comparison of five root canal length measuring instruments. *J Endodont* 15:573-577, 1989.
18. Fouad, A.F., Krell, K.V., McKendry, D.J. et al. A clinical evaluation of five electronic root canal length measuring instruments. *J Endodont* 16:446-449, 1990.
19. Ushiyama, J. New principle and method for measuring the root canal length. *J Endodont* 9:97-104, 1983.
20. Hasegawa, K., Iizuka, H., Takei, M. et al. A new method and apparatus for measuring root canal length. *J Nihon Univ Sch Dent* 28:117-128, 1986.
21. Keller, M.E., Brown, C.E. and Newton, C.W. A clinical evaluation of the endocater — an electronic apex locator. *J Endodont* 17:271-274, 1991.
22. Kobayashi, C., Matoba, K., Suda, H. et al. New practical model of the division method electronic root canal length measuring device. *J Jap Endo Soc* 12:143-148, 1991.
23. Palmer, M.J., Weine, F.S. and Healey, H.J. Position of the apical foramen in relation to endodontic therapy. *J Can Dent Assoc* 37:305-308, 1971.
24. Custer, L.E. Exact methods of locating the apical foramen. *J Nat Dent Assoc* 5:815-819, 1918.
25. Gordon, E. An instrument for measuring the lengths of root canals. *Dent Pract* 11:3:86-87, 1960.
26. Cash, P.W. Electronic measurement of root canals. *Dent Survey* 48 (Dec):19-20, 1972.
27. Inoue, N. Dental "stethoscope" measures root canal. *Dent Survey* 48 (Jan): 38-39, 1972.
28. Inoue, N. and Skinner, D.H. A simple and accurate way of measuring root canal length. *J Endodont* 11:421-427, 1985.
29. Hasegawa, K. New electronic apparatus for measuring the root canal length. *JDMA* 36:263, 1979.
30. Hasegawa, K., Ohashi, M. and Takei, M. On measurement by the electronic apparatus for measuring the root canal length. *JDMA* 36:570, 1980.
31. Takei, M. Basic studies on the electronic method for measuring the root canal length — Effects of surface area of electrode and diameter of glass model root tube on the meter-indicating values. *Jpn J Dent Mat* 2:290-297, 1983.
32. Hasegawa, K. Endocater and Endotape method. *DE* 69:30-33, 1984.
33. Hasegawa, K., Iizuka, M., Takei, M. et al. Clinical application of Endotape (abstr 74). *J Dent Res* 64:744, 1985.
34. Huang, L. An experimental study of the principle of electronic root canal measurement. *J Endodont* 13:60-64, 1987.
35. Yamaoka, M., Yamashita, Y. and Saito, T. *Electrical root canal measuring instrument based on a new principle* (Thesis). Tokyo, Nihon University School of Dentistry, 1989.
36. Kaufman, A.Y., Szajkis, S. and Niv, N. The efficiency and reliability of the Dentometer for detecting root canal length. *Oral Surg* 67:573-577, 1989.
37. McDonald, N.J. and Hovland, E.J. An evaluation of the apex locator Endocater. *J Endodont* 16:5-8, 1990.
38. Ricard, O., Roux, D., Bourdeau, L. et al. Clinical evaluation of the accuracy of the evident RCM mark II apex locator. *J Endodont* 17:567-569, 1991.
39. McDonald, N.J. The electronic determination of working length. *Dent Clin North Am* 36:293-307, 1992.
40. Castellucci, A., Falchetta, M. and Becciani, R. Affidabilità in vitro di un nuovo localizzatore elettronico del forame apicale. *G It Endo* 3:109-119, 1992.
41. Caldwell, J.L. Change in working length following instrumentation of molar canals. *Oral Surg* 41:114-118, 1976.
42. Farber, J.P. and Bernstein, M. The effect of instrumentation on root canal length as measured with an electronic device. *J Endodont* 9:114-115, 1983.
43. Fouad, A.F., Rivera, E.M. and Krell, K.V. Accuracy of the Endex with variations in canal irrigants and foramen size. *J Endodont* 19:63-67, 1993.
44. Frank, A.L. and Torabinejad, M. An in vivo evaluation of Endex electronic apex locator. *J Endodont* 19:177-179, 1993.
45. Kaufman, A.V. and Katz, A. Reliability of Root ZX apex locator tested by an in vitro model. Research Seminars, Abstract 69. *J Endodont* 19:201, 1993.
46. Hembrough, J.H., Weine, F.S., Pisano, J.V. et al. Accuracy of an electronic apex locator: A clinical evaluation in maxillary molars. *J Endodont* 19:242-246, 1993.

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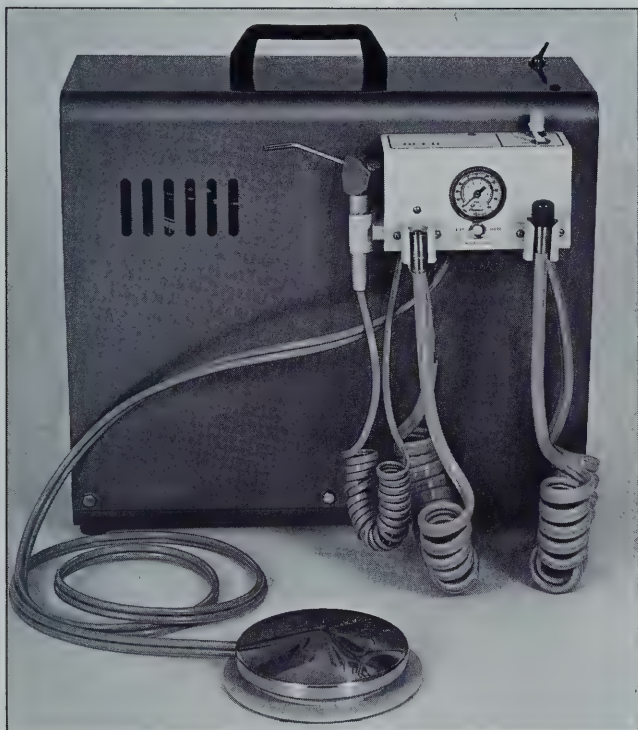
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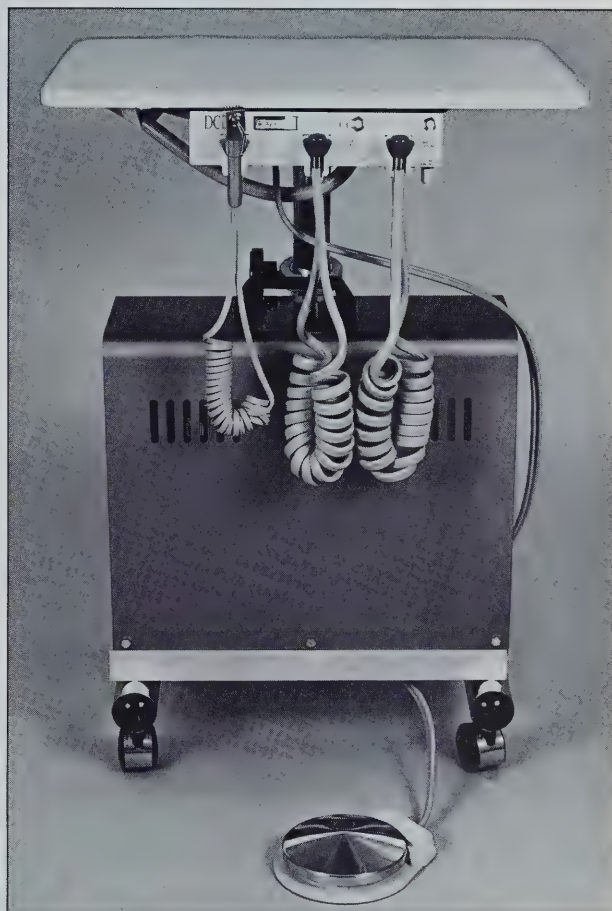
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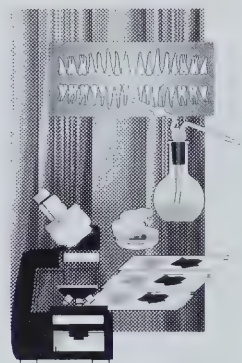
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Étude comparative du diamètre des pointes d'explorateurs dentaires et l'effet de l'usure sur le diamètre

Haig Baltadjian, DDS, MSD

Hélène Labrèche

Yves Lepage, PhD

Patrice Milot, DMD, MSD

Montréal

SOMMAIRE

Les diamètres des pointes d'explorateurs de trois compagnies ont été mesurés à 10, 20, 40 et 50 microns de la pointe à l'état neuf et ensuite après un test d'usure de 25 et 150 fois.

L'étude nous a révélé que les explorateurs de la compagnie Hu-Friedy sont les plus uniformes, ceux des compagnies Hu-Friedy et Healthco sont plus fins à l'état neuf, mais ceux de la compagnie Premier semblent s'user le moins.

SUMMARY

The diameter of dental explorers from three companies have been measured at 10, 20, 40 and 50 microns from the end of the tip, first on new explorers and then again after submitting these explorers to a simulated wear test of 25 and 150 times.

The study has shown that on new explorers Hu-Friedy had the most uniform tip diameter. The tip diameter of explorers from Healthco and Hu-Friedy were finer than Premier's, and Premier explorers seemed to show the least wear.

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Le diagnostic de la carie dentaire et la vérification des restaurations à l'aide de l'explorateur occupent une place fondamentale dans la pratique quotidienne du dentiste.

Le diamètre de la pointe de l'explorateur peut influencer sur le choix d'intervenir ou non sur une dent ou sur une obturation, selon que l'on juge que la dent est cariée ou pas ou que l'obturation est défectueuse ou non.^{1,2}

G.V. Black,³ en 1936, soulignait l'importance d'utiliser un explorateur pointu lors de l'examen des caries.

On a relevé des différences considérables, intra et inter-examineur, dans des études épidémiologiques dans le diagnostic clinique et radiologique de la carie, et ce parmi des examinateurs expérimentés et des professeurs d'université.⁴⁻⁸ Mais il est aussi possible de standardiser les résultats obtenus en calibrant et en entraînant les cliniciens.⁸

Pour les études épidémiologiques, certains préfèrent changer la pointe de l'explorateur après quelques utilisations^{9,10} tandis que d'autres aiment mieux l'aiguiser.⁷ D'au-

tres utilisent des explorateurs à pointe émoussée pour réduire la variabilité.¹¹⁻¹⁴

D'autres encore préfèrent la technique visuelle à la technique visuelle-tactile pour la détection de la carie au niveau des puits et fissures.^{13,15-21} Par contre, Creamer²¹ et al ont démontré qu'à l'aide d'explorateurs émoussés on avait omis de diagnostiquer 1,4 p. cent de carie de Grade 3 (dans la dentine) visible à la radiographie sur des molaires supérieures et 7,2 p. cent sur des molaires inférieures, ils recommandent de reprendre l'étude à l'aide d'explorateurs à pointe fine.

D'autres chercheurs s'objectent à l'utilisation de l'explorateur par crainte de précipiter la carie dans des sillons où il n'y en a pas.^{11,22,23}

Selon les normes de l'OMS,²⁴ le diagnostic est porté à l'aide du miroir, d'un explorateur et d'un éclairage suffisant. Une dent sera notée saine si elle ne présente aucun critère positif de la carie, le critère retenu étant la pénétration de la sonde dans une cavité sous l'émail ou un ramollissement des parois. En cas de doute le diagnostic de carie est rejeté.

La détection de la carie ne dépend pas seulement du diamètre de la pointe de l'explorateur mais aus-



Fig. 1: L'ombre projeté sur l'écran de la pointe d'un explorateur grossi de 50 fois dont on a mesuré le diamètre à 10, 20, 40 et 50 microns de la pointe.

si de la dureté de l'émail, de la morphologie du sillon, de l'expérience de l'opérateur, de son sens tactile, la pression exercée sur l'explorateur, et de la direction de la force de pression.

L'Association dentaire américaine (ADA) et l'Organisation Internationale de Normalisation ISO n'ont pas de norme quant au diamètre des pointes des explorateurs dentaires.

Cette recherche vise à comparer le diamètre des pointes d'explorateurs dentaires, à l'état neuf et après usure.

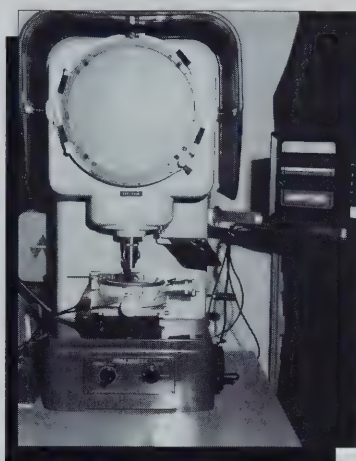


Fig. 2: Le comparateur optique Nikon pour mesurer les diamètres des pointes des explorateurs.

Materiel et Methode

Vingt-cinq explorateurs neufs de trois compagnies différentes^a sont utilisés pour cette étude.

Les explorateurs sont placés de façon à mesurer le diamètre de la pointe à partir de 10, 20, 40, et 50 micromètres du bout (**Fig. 1**). L'appareil utilisé est un comparateur optique à un grossissement de 50 X^b



Fig. 3: Un explorateur est positionné sur le plateau afin de mesurer les diamètres.

(**Figs. 2, 3**). Pour s'assurer de la validité des mesures, les explorateurs sont positionnés horizontalement à l'aide d'une serre parallèle de façon à pouvoir mesurer le diamètre de la pointe (**Fig. 4**). Chaque lecture de diamètre est reprise une fois et la moyenne des deux lectures est enregistrée. La tige de la pointe de l'explorateur est placée

TABLEAU I

Statistiques descriptives des données brutes

	Groupe								
	Healthco			Hu-Friedy			Premier		
	N	Mean	STD	N	Mean	STD	N	Mean	STD
UO_10	25	54,40	21,23	25	56,80	9,00	23	85,22	25,38
U0_20	25	74,40	32,41	25	67,20	7,92	23	97,39	28,95
U0_40	25	87,60	34,67	25	84,40	7,68	23	108,70	30,65
U0_50	25	95,20	34,29	25	92,40	8,31	23	115,65	31,45
U25_10	24	65,00	23,77	25	57,20	11,37	23	82,17	26,28
U25_20	24	79,17	32,02	25	76,40	8,60	23	100,87	27,95
U25_40	24	92,50	33,00	25	90,00	9,13	23	113,48	30,39
U25_50	24	101,67	31,30	25	96,80	10,30	23	120,00	31,04
U150_10	24	70,42	24,58	25	61,20	12,36	23	83,04	25,48
U150_20	24	89,58	29,85	25	78,80	11,66	23	102,61	26,32
U150_40	24	105,42	29,92	25	99,60	8,89	23	118,26	28,23
U150_50	24	113,75	29,46	25	104,00	9,13	23	124,35	26,60

- L'écart dans le diamètre des pointes est moindre chez les explorateurs de la compagnie Hu-Friedy.
- Les diamètres des pointes des explorateurs neufs de Hu-Friedy et Healthco sont plus petits que ceux de Premier.
- Les explorateurs de Premier semblent s'user le moins. À 10 microns de la pointe, ils semblent même s'effiler davantage.



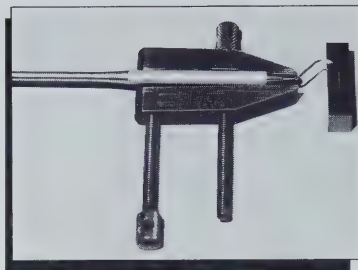


Fig. 4: L'explorateur est positionné horizontalement à l'aide d'une serre parallèle à l'axe Y de façon à mesurer les diamètres parfaitement perpendiculaire à l'axe Z.

de façon à ce qu'elle soit parallèle à l'axe Y pour que la lecture soit faite parfaitement perpendiculaire à l'axe Z, ceci afin d'influencer le moins possible la longueur mesurée. La séquence de lecture s'est faite d'une façon établie d'avance. Les données sont analysées statistiquement.

Usure Des Explorateurs (Mécaniquement)

Une molaire (dent no. 27) sans carie mais avec un sillon profond et pigmenté est enracinée dans un moule de forme cylindrique allongé, façonné avec un acrylique autopolymérisant^c de telle sorte qu'elle puisse être insérée à la verticale (couronne en bas) dans un mandrin fixé à la partie supérieure de l'appareil «Instron»^d (Fig. 5).

Le manche de l'explorateur est fixé à la base de l'Instron, à l'aide d'un étau,^e de telle sorte qu'il soit en position horizontale afin que la pointe soit parfaitement opposée au sillon de la dent déjà en place (Fig. 5).

À l'aide de l'Instron, une pression de (1,0 kgF) a été appliquée de façon répétitive sur le sillon de la dent, à une vitesse de 100 mm/min. (Fig. 6). On mesure le diamètre de la pointe après 25 répétitions puis après 150 répétitions.

Résultats

Un explorateur de la compagnie Healthco a été éliminé parce qu'il brisé durant le test d'usure. Deux explorateurs de la compagnie Premier ont été éliminés, l'un à cause d'une courbure à la pointe qui faussait la lecture et l'autre parce qu'il n'était pas identique aux autres.

Les données brutes des résultats se trouvent au **Tableau I**.

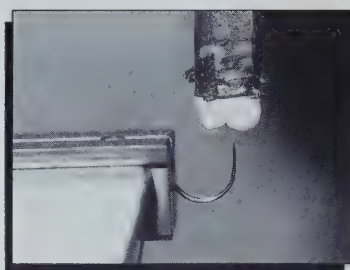


Fig. 5: Une molaire est enracinée dans un moule cylindrique allongé, et insérée à la verticale dans un mandrin fixé à la partie supérieure de l'appareil Instron.

Les diamètres des pointes des explorateurs de la compagnie Hu-Friedy sont généralement plus uniformes comparés à ceux des deux autres, en d'autres mots, la variation du diamètre des pointes (mesurée par l'écart-type) est moindre chez les explorateurs de cette compagnie (Fig. 1).

À l'état neuf, le diamètre des pointes est plus petit sur les explorateurs des compagnies Healthco et Hu-Friedy comparativement à la compagnie Premier. À la lecture du 10 micromètres de la pointe, les explorateurs de la compagnie Premier ne montrent pas d'usure, au contraire la pointe semble s'effiler un petit peu (Fig. 1).

À l'aide d'une analyse de variance à trois facteurs (compagnie, distance et usure) répétés sur les deux derniers facteurs, on trouve qu'il y a une interaction significative ($P < 0,0002$) entre les compagnies et la distance en ce qui concerne la mesure d'usure relative; c.à.d. le comportement des mesures d'usure relative ne sont pas les mêmes d'une compagnie à l'autre quand on considère les différentes distances de la pointe. Mesure d'usure relative pour A répétitions à une distance B de la pointe

$$= \frac{(UA-B) - (O0-B)}{U0-B}$$

(où UA - B représente l'usure après A répétitions à une distance B de la pointe, A = 0, 25 ou 150 et B = 10,20,40 ou 50) (Fig. 7).

Dans ce qui suit, pour tenir compte de l'interaction significative, nous avons fixé chacune des distances puis analysé la mesure d'usure relative selon un plan d'analyse de variance à deux facteurs (compagnie et usure) répété sur le deuxième facteur. À une distance

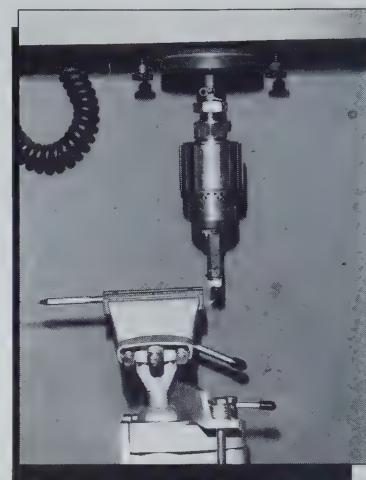


Fig. 6: Une pression de 1,0 KgF est appliquée de façon répétitive sur le sillon de la dent à une vitesse de 100 mm/min.

de 10 micromètres de la pointe, nous avons trouvé une différence significative ($p < 0,0001$) entre les groupes indépendamment du niveau d'usure. Les explorateurs de la compagnie Healthco s'usent de façon différente des explorateurs des autres compagnies, l'usure est relativement plus marquée. Mais aux distances 20, 40 et 50 micromètres de la pointe, il n'y a aucune différence significative.

Discussion

Nous avons préféré user les explorateurs à l'aide de l'appareil Instron plutôt qu'une simulation clinique dans le but de contrôler la variable de la pression exercée à la pointe de l'explorateur.

La force de 1,0 kgF peut avoir été trop grande car un des explorateurs a brisé pendant le test d'usure. Malgré cette force plus élevée les pointes ont démontré une usure relativement peu marquée.

Le fait que les explorateurs de la compagnie Premier semblent ne pas montrer d'usure mais semblent plutôt s'effiler un petit peu peut avoir été causé par une usure des côtés et non à la pointe.

À 50 microns de la pointe, les diamètres des pointes des explorateurs des trois compagnies dentaires variaient de 92,40 à 115,65 microns. Les diamètres des pointes des explorateurs des compagnies dentaires japonaises dans l'étude d'Iwakura et Shimada, à la même distance de la pointe, variaient de 86,00 à 148,40 microns. Iwakura

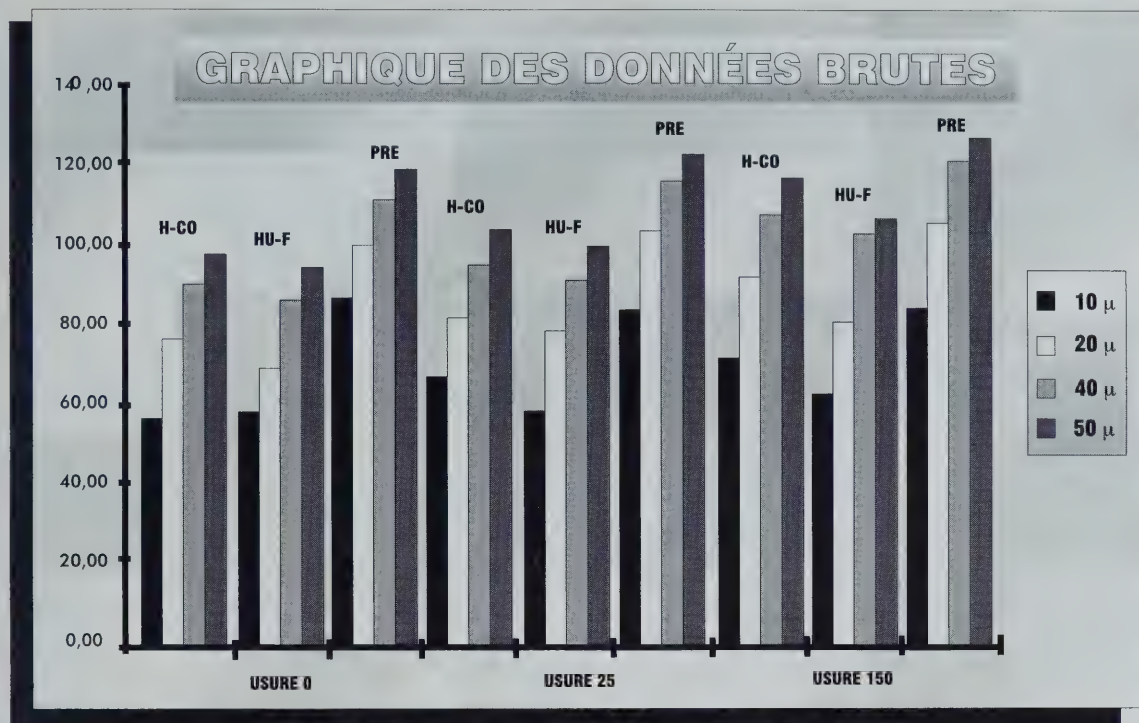


Fig. 7: Graphique des données brutes.

et Shimada ont utilisé les explorateurs dans une étude clinique parallèle et ont trouvé que les explorateurs à pointe fine ont détecté 30 p. cent plus de carie. Ils ont mesuré le diamètre des explorateurs à partir de 50 microns et plus de la pointe, contrairement à notre étude où nous avons mesuré de 50 microns et moins de la pointe.

À la lumière des résultats de cette étude on ne peut pas dire s'il y a ou non une différence significative cliniquement malgré une différence significative statistiquement. La seule façon de répondre à cette question serait de mener une étude clinique parallèle, en se servant des mêmes explorateurs.

Conclusion

- Les pointes des explorateurs de la compagnie Hu-Friedy sont relativement plus uniformes que celles des deux autres compagnies.
- Le diamètre des pointes des explorateurs neufs des compagnies Hu-Friedy et Healthco est plus fin que celui de Premier.
- Les pointes des explorateurs montrent de l'usure mais celle-ci n'est pas marquée. On ne peut conclure si le degré d'usure ren-

contré dans l'étude est significatif ou non cliniquement.

- À 10 microns de la pointe, les explorateurs de la compagnie Premier démontrent moins d'usure que ceux des compagnies Hu-Friedy et Healthco.
- Aux distances 20, 40 et 50 microns de la pointe, il n'a aucune différence significative dans le diamètre des pointes des explorateurs des trois compagnies.

a) DE 5, Healthco International, Inc., Dépôt Dentaire (Canada) Ltée.

a) C2 EXD 5, Hu-Friedy Mfg. Co.

a) XF CF 23, Premier Dental (Canada) Inc.

b) Nikon Profile Projector Model 6C (grossissement: 50X)

c) Formatray, SYBRON, Kerr Dental Products Division

d) Instron : Model 4201, cellule de 1KN, en compression.

e) Swivel Vacuvisse de Lenline, distribué par Produits Electroniques Ltée.

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D'Haig Baltadjian est professeur titulaire à la faculté de médecine dentaire au département de dentisterie de restauration, Université de Montréal.

Yves Lepage est professeur titulaire à la faculté des arts et des sciences au département de mathématiques et de statistique, Université de Montréal.

Hélène Labrèche est technicienne et assistante de recherches au laboratoire de matériaux dentaires du département de dentisterie de restauration, Université de Montréal.



D^r **Patrice Milot** est professeur adjoint à la faculté de médecine dentaire au département de dentisterie de restauration, Université de Montréal.

Les demandes des tirés-à-part peuvent être adressées à : D^r **Haig Baltadjian**, Faculté de médecine dentaire, Université de Montréal, C.P. 6128, Succ. «A», Montréal, Québec H3C 3J7.

Bibliographie

- Houpt, M., Fuks, A.B. and Eidelman, E. Measuring the stickiness of pits and fissures in enamel. *Clin Prev Dent* 7:28-30, 1985.
- Rappold, A.P., Ripps, A.H. and Ireland, E.J. Explorer sharpness as related to margin evaluations. *Op Dent* 17:2-6, 1992.
- Black, G.V. *Operative Dentistry*. Vol. I, 7th ed. Medico-Dental Publishing Co., Chicago, pp. 31-32, 1936.
- Shaw, L. and Murray, J.J. Inter-examiner and intra-examiner reproducibility in clinical and radiographic diagnosis. *Int Dent J* 25:280-288, 1975.
- Mileman, P., Pursell-Lewis, D. and van der Weele, T. Variation in radiographic diagnosis and treatment decisions among university teachers. *Commun Dent Oral Epidemiol* 10:329-334, 1982.
- Rytoma, I., Jarvinen, V. and Jarvinen, J. Variation in caries recording and restorative treatment plan among university teachers. *Commun Dent Oral Epidemiol* 7:335-339, 1979.
- Jackson, D. The clinical diagnosis of dental caries. *Brit Dent J* 88:207-213, 1950.
- Davies, G.N. and Cadell, P.B. Four investigations to determine the reliability of caries-recording methods. *Arch Oral Biol* 8:331-348, 1963.
- Miller, J. and Atkinson, H.F. A replaceable probe point. *Brit Dent J* 90:157-158, 1951.
- Miller, J. and Hobson, P. Determination of the presence of caries in fissures. *Brit Dent J* 100:15-18, 1956.
- Bergman, G. and Linden, L. The action of the explorer on incipient caries. *Svensk Tandlaek Tidskr* 62:629-634, 1969.
- Van der Laan-van Dorp, C.S.E., Exterkate, R.A.M. and Ten Cate, J.M. Effect of probing on progression of fissure caries. *Caries Res* 20:151, 1986.
- Ock, W.P. The diagnosis of early carious lesions — a review. *J Paediatr Dent* 3:1-6, 1987.
- Sawle, R.F. and Andlaw, R.J. Has occlusal caries become more difficult to diagnose? *Brit Dent J* 164:209-211, 1988.
- Howat, A.P., Holloway, P.J. and Brandt, R.S. The effect of diagnostic criteria on the sensitivity of dental epidemiological data. *Caries Res* 15:117-123, 1981.
- Downer, M.C. and Mullane, D.M. A comparison of the concurrent validity of two epidemiologic diagnostic systems for caries evaluation. *Commun Dent Oral Epidemiol* 3:20-24, 1975.
- Kay, E.J., Watts, A., Patterson, R.C. et al. Preliminary investigation into the validity of dentists decisions to restore occlusal surfaces of permanent teeth. *Commun Dent Oral Epidemiol* 16:91-94, 1988.
- Danish Medical Research Council in cooperation with Danish Hospital Institute prevention and treatment of dental caries. Consensus Report. *Br Dent J* 161:81-4, 1985.
- Dooland, M. and Smales, R. The diagnosis of fissure caries in permanent molar teeth. *J Dent Child* 49:181-5, 1982.
- Kidd, E.A.M. The diagnosis and management of the early carious lesion in permanent teeth. *Dent Update* 11:69-81, 1984.
- Creamer, S.L., Russell, J.I., Strang, D.M. et al. The prevalence of clinically undetected occlusal dentine caries in Scottish adolescents. *Brit Dent J* 169:126-129, 1990.
- Elderton, R.J. Assessment and clinical management of early caries in young adults. Invasive versus non-invasive methods. *Brit Dent J* 158:440-444, 1985.
- Ekstrand, K.R. and Thylstrup, K.A. Light microscope study of the effect of probing in occlusal surfaces. *Caries Res* 21:368-374, 1987.
- O.M.S. Santé bucco-dentaire: tendances et projection mondiales. Rapp. trimest. sanit. mond., OMS, Genève, 1987.
- Iwakura, M. and Shimada, Y. The point of the dental explorer. *Jap J of Dental Health* 27:297-304, 1978.

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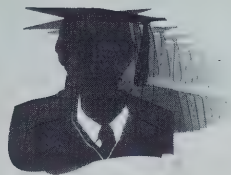
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.....	720
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CDA Leasing	756
CDA RSP	724
CDA — Taking Care of Business	748
CDSPI	725
Clinical Research Associates	757
Cinical Research Dental	
.....	716
Colgate	719
Hoechst-Roussel ..	713, 722
Orthorum Canada	773
Oxyfresh	767
Pharmascience	762
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Procter & Gamble ..	746, 747
Scotia Bank	731
Teledyne Water Pik	732
Warner Lambert	758
Zila Pharmaceuticals	761

DENTAL STUDENTS' FORUM



Staff/Student Relations: Building the Trust

The dental profession has progressed significantly in the past few years. Unfortunately, dental education has not advanced at the same pace. Although some improvements have been made, several shortcomings still exist in dental education, many with frightening similarity, in the majority of Canada's 10 dental faculties.

Many of these problems are identical to those faced by dental students 30 years ago. These former students are the dentists and dental educators of today. As such, it is their responsibility to stop history from repeating itself.

Each faculty has its own peculiar issues. This paper will only address the problems that are common across the country, however. Its specific goal is to offer tangible solutions to many of the problems facing Canadian dental students today.

Although the CDA committee on student affairs (CSA) has addressed many of these issues before, staff/student relations are still a very serious concern. One fundamental problem is the general fear of reprisal that confronts students who wish to voice legitimate concerns about staff or curricula.

Today, the students who have made it into dental school have achieved this goal because of their intelligence, drive and ability to express their thoughts. It is therefore reasonable to believe that many of these students have valuable ideas that could make positive contributions to dental education.

In this light, it is somewhat alarming that, across the country, students feel that speaking freely often causes negative repercussions. Whether this feeling is real or perceived, it is present and com-

mon. Many faculties have established staff/student relations or grievance committees for the purpose of allowing students to voice their concerns. In theory, these committees offer a direct solution for addressing student issues. In practice, however, the committees are often ineffective: Many of the concerns are not sent back to the staff involved; barriers are created that make it difficult to solve specific problems (for example, individual staff members cannot be named); or, due to the perceived power of the faculty members on the committee, students still feel apprehensive about repercussions.

These committees must be completely neutral. They must have specific mandates, with safeguards that prevent any personal reprisal from issues brought up during the meetings. The faculty members sitting on the committees must be powerful enough to affect change, but removed from direct grading, thereby ensuring impartiality. Only students can select such faculty members. On the other hand, the students that sit on the committees must be forthcoming enough to address all the issues. They must realize that they are representing other students, and that the faculty on the committees are indeed there to help. In short, a foundation of trust should be created by these committees, which can serve to provide the basis for more trust throughout the staff and student population.

Some of the student concerns relate to the actions of demonstrators on the clinic floor. One recurring theme involves clinical instructors who berate students in front of their patients. This experience is humiliating and provides no benefit for either the student or

the patient. The student often loses confidence in his or her abilities and, invariably, the patient begins to question the competence of the student providing their treatment. This problem is easily avoided by the instructor simply taking the student aside. Furthermore, such conflicts are unbecoming to the profession, especially to students who will join its ranks within a few short years.

Insensitive and unprofessional behavior on the part of demonstrators should not be tolerated under any circumstances. Dental faculties should have specific measures in place to deal effectively with proven incidences of such misconduct.

Another issue that specifically involves clinical instructors is the variability of techniques used by the instructors on the clinic floor. In the preclinical laboratory, the teaching of a single technique is beneficial to the learning process in that it stresses the goal of reaching a certain ideal to neophytes of the profession. Once the foundation has been made in the lab, however, a variety of technique in the clinic is a valuable and positive experience. Students should be open to learning different methods of performing one procedure. Likewise, the demonstrators should be open to the inquiries of the students. It is vitally important that the instructors be equipped to provide insight into why their method is more practical than another. They should be aware that the student is not questioning their authority or ability, but is instead making an effort to cultivate and develop his or her dental knowledge. Such interactive teaching modalities are beneficial to both the student and the demonstrator. Moreover, the

JOURNAL

September/
Septembre
1993
Vol. 59
No. 9

failure to allow students to question methodology results in the graduation of poorly-educated automations and creates an obvious breakdown in the education process.

Instructor variability also exists in terms of grading practices. It is the understanding of the CSA that educators are pursuing workshops at the Association of Canadian Faculties of Dentistry (ACFD) toward a consolidation of grades.

The students of Canada encourage any activity that will increase the standardization of grades. One method could require all clinical instructors within one department to attend a mandatory workshop at the beginning of each school year. This workshop would involve showing instructors photographs and/or models of work done by previous students. The instructors would individually grade the work. Any discrepancies in the assigned grades would be discussed until consistency in grading could be reached among all instructors.

Unfortunately, sexual inequality is still an issue in Canadian dental schools. Several accounts exist of chauvinism against female students by some male instructors, as well as favoritism toward female students by other male instructors. It is obvious that favoritism and discrimination of any type is intolerable and must be dealt with severely. Such incidents should be brought up individually with the instructor involved or investigated by a legitimate staff/student liaison committee.

Students are also concerned about didactic and curricular issues. Many lecture hours are being spent on topics that are already covered in other courses. It is the responsibility of the institution to use the four-year (five in Saskatchewan) program as efficiently and effectively as possible. This is simply not possible if lectures are being repeated in multiple courses. But if every department coordinated their lecture material, this problem could be avoided. Dalhousie University has made significant progress in this area by coordinating their entire program.

Curriculum changes are another common source of conflict be-

tween staff and students. Hasty changes in the curriculum that occur when the students are already immersed in the program are truly frustrating, especially when no consultation with students has taken place. Every effort should be taken to make changes to the curriculum effective for the incoming first-year class only. In this way, fewer errors and oversights will occur, and current students will feel less subject to hurried change. At some faculties, the committees responsible for curriculum changes do not include a single student. Who knows the strengths and weaknesses of a program better than a student who has just been through it? Inclusion of one or more students on these committees should be compulsory, thereby aiding in the free flow of information between staff and students, and the continual improvement of the dental curriculum.

Despite the problems cited in this paper, the quality of education offered by Canadian dental faculties is extremely high and provides a stimulating, challenging atmosphere for learning the art and science of dentistry. Many outstanding professors offer invaluable insight in a constructive and respectful manner. These professors should be rewarded for their excellence. Teaching awards are given on a separate basis by each faculty, but perhaps national recognition would be more suitable for these remarkable individuals. A national award based on teaching skills, with clear criteria, would promote excellence in teaching.

One method of identifying these exceptional educators is through a student evaluation of faculty members. While it is true that some form of evaluation is done by the students of every faculty, they are often cursory in nature and the results are often disregarded. These forms should be standardized and a review should be mandatory for all frequent lecturers and clinical instructors. If the students are then willing to take these evaluations seriously, and spend the time and effort necessary to properly complete them, then they should be useful as a component in promo-

tion and/or tenure decisions. Students would also appreciate receiving feedback on the results of these evaluations. This would not be used as a method of obstructing the education process, but instead as an incentive for improvement to professors who continually get poor evaluations, and as recognition of the more prominent educators. Once again, increased involvement in the education process will continue to build the trust between faculty and students.

It is evident that the root of many of the problems that exist between dental students and their professors can be found in the lack of trust that currently exists. The realities of dental education today create a situation where students are constantly having their work scrutinized by their instructors. This situation leads to the potential for many conflicts between personalities, ideas, and philosophies, as well as an erosion of trust. The CSA is aware that some dental students find fault in every situation, whereas others are simply indifferent. Many of these students feel distant from the education system and therefore do not concentrate their efforts on improving it. This perception must be changed by both students and educators. Students must begin to play a more active role in their education and believe more in the intent of their institutions. Educators, on the other hand, must realize that their students are thoughtful and intelligent individuals, and must be treated as such. They must allow the students to play active roles in their learning.

Both students and instructors share the common goal of providing a positive, learning-intensive atmosphere, and graduating dentists who continue to uphold the highest level of dental care in the world. All of the concerns outlined in this paper have relatively simple solutions. If faculty and students cooperate, dental education, and thus the dental profession, will continue to improve.

Kevin L. Davis
*Student Governor-Elect, CDA
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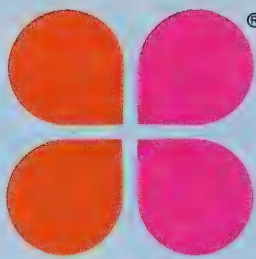
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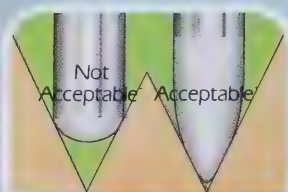
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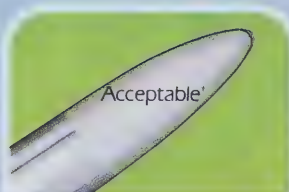
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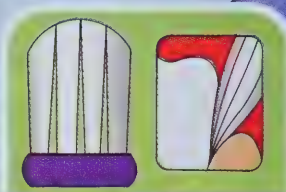
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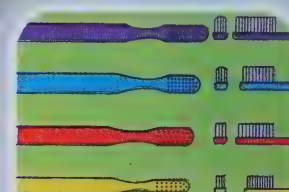
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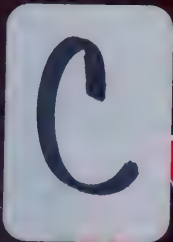
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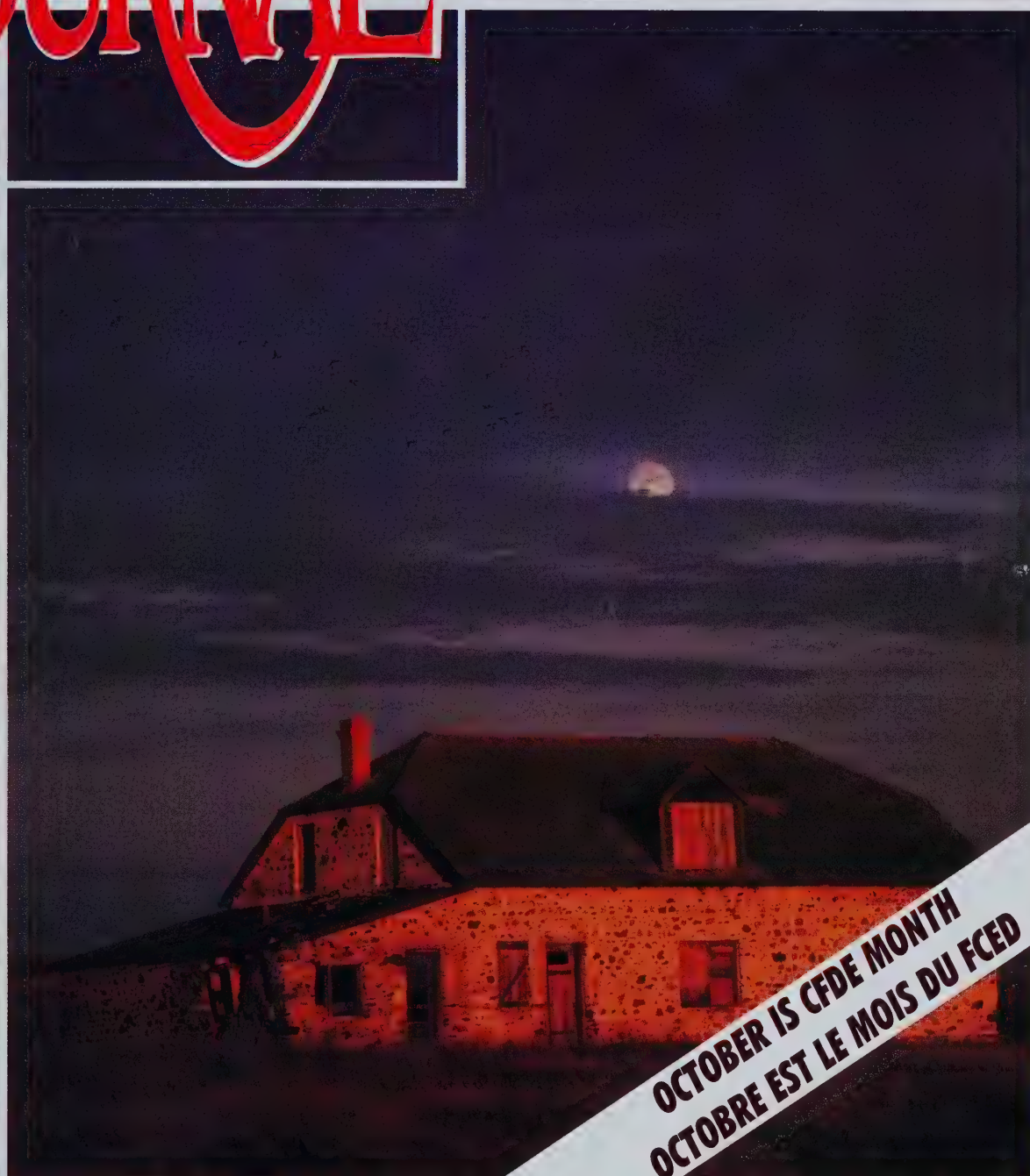
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of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 59 No. 10
October/Octobre 1993

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Quality of Life — Older Adults/La qualité de la vie chez les personnes âgées
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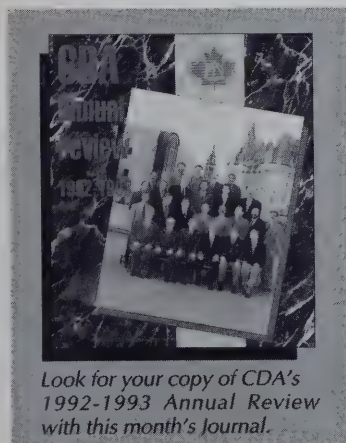
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SCIENTIFIC



LETTERS



Look for your copy of CDA's
1992-1993 Annual Review
with this month's Journal.

Scientific

817

Access and Isolation Problem Solving In Endodontics: Posterior Teeth

William H. Liebenberg, B.Sc., BDS (Rand)

823

Down's Syndrome and Alzheimer's Disease

Michael J. Sigal, DDS, M.Sc., Dip. Ped., MRCD(C)

Norman Levine, B.Sc., DDS, M.Sc.D., Dip. Ped.,
FRCD(C)

830

Oral Health and the Quality of Life Among Older Adults: The Oral Health Impact Profile

David Locker, BDS, PhD

Gary Slade, BDS, DDPH

841

Un Cas d'Ingestion de Prothese Mandibulaire Partielle

Antony Carbery, DMD

Maryse Provençal, HD

Clinical

845

Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts: A Case Report

Earle R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA

George D'Aguiam, DDS

Departments

794

Announcements

797

Editorial

799

President's Column

800

Letters to the Editor

803

News Update

806

Library

809

Practice Management
& Success

813

Let's Talk

815

Book Reviews

851

CDA Access Ads

855

Advertisers' Index

856

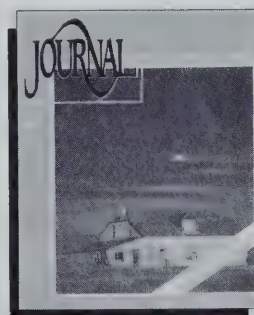
CDA Dental Meeting

859

October is
CFDE Month

861

It's My Opinion



Cover: October sunset in the
Little Plume district of Alberta
(Photo courtesy of Wilbur
Samuel Trip)

JOURNAL

October/
Octobre
1993
Vol. 59
No. 10

793

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

May 12-14, 1994
Newfoundland Dental Association
Annual Convention
 (709) 579-2362

October 2-8, 1994
Joint CDA/FDI Annual Dental Meeting
 Vancouver, BC
 (613) 523-1770,
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November/Novembre 1993

November 2-4: American Academy of Gold Foil Operators in Portland, Oregon. For details, contact: Secretary-Treasurer Dr. Ronald K. Harris, 17922 Tallgrass Court, Noblesville, Indiana 46060 or call: (317) 867-0414.

November 3-5: 56th Annual Meeting of the American Association of Public Health Dentistry, in San Francisco, CA. For further information, please contact: Dr. Rhys B. Jones, Dental Health Center, St. Luke's Medical Plaza, 855 A Avenue NE, Cedar Rapids, IA 52402.

November 8-10: Israeli Dental Association International Dental Conference at the Tel-Aviv fair grounds in Tel-Aviv, Israel. For more information, write: Dr. I. Chen, IDA Chairman, Israeli Dental Association, 49 Bar-Kochba St., Israel, Tel-Aviv 63427.

January/Janvier 1994

January 7-9: Academy of Dentistry International, in collaboration with the **Vietnamese Odonto-Stomatological Association** will host the 1st International Dental Congress and Expodent 1994 in Ho Chi Minh City, Vietnam. For details, contact: Pac-West (S) DTE Ltd. 1 Selegie Road, 04-05 Paradiz Centre, Singapore 0718, Republic of Singapore.

January 20-23: 19th Yankee Dental Congress (Massachusetts Dental Society) at Boston's Hynes Convention Center. For information, contact: Dr. Ann Kirk, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Massachusetts, 01760-7511. Tel: (508) 651-7511.

January 21-25: The Indian Dental Association hosts the 48th Indian Dental conference in Nagpur, India. An "Innovation in Dentistry" featuring cosmetic, conservative and preventive treatment modes. For information call Koki Mehta, Winnipeg, (204) 661-8864 or fax (204) 663-7529.

January 29-February 5: 32nd International Alpine Dental Conference being held at the Hotel Annapurna, Courchevel, France. For details, contact: International Dental Foundation, 53 Sloane St., London, England, SW1X 9SW.

February/Février 1994

February 3-5: 2nd Catalan Congress on Odontostomatology/Dentalmat 94 at the Palacio de Congresos de Barcelona in Spain. For details, contact: The Official Association of Odontologist and Stomatologist of Catalina, Central Office, Via Laietana, 30, 4F, 08003, Barcelona, Spain.

February 10-12: International Dental Conference 1994, organized by the Dental Association of Malta at the New Dolmen Hotel, Malta. For information, contact: Malta University Services Ltd., University of Malta, Msida MSD 06, Malta.

February 16-20: Jamaica Dental Association 30th National Dental Convention at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

March/Mars 1994

March 3-5: Academy of Osseointegration Ninth Annual Meeting in Orlando, Florida. For information, contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Illinois 60611-4267.

March 19-26: 33rd International Alpine Dental Conference being held at the Hotel Annapurna, Courchevel, France. For details, contact: International Dental Foundation, 53 Sloane St., London, England, SW1X 9SW.

April/Avril 1994

April 27-May 1: 51st Annual Session of the American Association of Endodontists (AAE) at the Hilton Hawaiian Village in Honolulu, Hawaii. To register, contact: American Association of Endodontists, Annual Session Registration, 211 E. Chicago Avenue, Chicago, Illinois, 60611-2691. Tel: (312) 266-7255.

June/Juin 1994

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046, La Habana, Cuba.

June 20-25: Expodental 94 - Turkish Dental Association Second International Dental Congress in Istanbul, Turkey. For information, contact: Istanbul Chamber of Dentists, Mesrutiyet Cad. 182/7 Sishane, Istanbul, Turkey.

June 25-July 1: 10th Congress of the International Association of Dentomaxillo-Facial Radiology in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMFR, c/o Korea Convention Services Ltd. SL Youngdong PO Box 305, Seoul 135-603, Korea.



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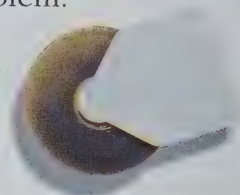
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EDITORIAL

A GUARANTEE — IS IT ETHICAL?



Dr. P. Ralph Crawford
Editor

In 1869, when Timothy Eaton opened his first store on Toronto's Yonge Street, he revolutionized merchandising in Canada. Eaton rejected the *caveat emptor* mentality, instituted a policy of one fair price for all, and offered his customers an all-encompassing guarantee: "goods satisfactory or money refunded."

I was reminded of Eaton's inventive retailing and genius recently, while moving some filing boxes from my former practice into storage. One small carton, clearly marked "Unsatisfactory Cases," took my mind back through 25 years of delivering denture care to thousands of patients. That carton has helped keep me humble. It is a constant reminder of my failures.

From the outset of practise, I adopted a similar office philosophy to Eaton's retailing policy. If a patient wasn't satisfied with his or her dentures, I refunded the entire fee.

The arrangement was actually quite simple. Patients paid for their new dentures in full on the day of insertion, but left their old dentures with me. One month later, if they were unhappy with their new dentures, despite my best efforts to adjust the fit or appearance, I gave

patients back their old dentures along with a cheque for the entire fee. The new dentures stayed with me.

In 25 years of practice, the last 15 limited to removable prosthodontics, I found it necessary to refund a total of 18 cases. In each case, the denture was carefully "autopsied" to discern where I had gone wrong. It was then mounted on a plaster base and placed on an open shelf in the laboratory. Today these dentures still remain in my "humble-box" as a reminder that dentistry is not a perfect science and that I am far from being a perfect dentist. Like most dentists around the world, I just try to do my best.

While I consider my refund policy to have been fair and proper, it may have been unethical in the strictest sense of the word. Article 10 of CDA's *Code of Ethics* states that: "A dentist must, neither by statement nor implication, warrant or guarantee the success of operations, appliances or treatment. A dentist has the responsibility to provide a high standard of care and accept responsibility for treatment rendered."

Allow me to plead my case.

Like hundreds of University of Manitoba dental faculty graduates, I was taught prosthodontics by the late Dr. Harold W. Hart. It was always his admonition that examination, diagnosis and treatment planning were the most important aspect of all dental treatment, particularly denture care. It was his "Principle Number One."

Once in practice, I always felt that it was my responsibility to determine, at the initial appointment, whether I could treat the patient successfully. However, that also meant that I sometimes had to ask myself, 'If the denture treatment failed because of something I missed at that first examination, was it really the patient's fault?'

I recall two of my 18 failed cases vividly. Both bear out the importance of Dr. Hart's Principle Number One — examination, diagnosis and treatment planning. The first case involved a lady in her mid 50s. She had either had 10 sets of dentures in 11 years or 11 sets in 10

years — I can never remember. But I do recall her telling me that all 10 (or was it 11?) of her previous dentists were "no good." After 30 days, when mine became the next name on her list of useless dentists, I was delighted to fulfil my guarantee arrangement.

The other case was that of a delightful gentleman in his early 90s. Hale and hearty, he made his way to my office by bus, on his own, to have his 43-year-old vulcanite dentures replaced. His dentures weren't bothering him, but his granddaughter was getting married the following month, on the very same day he and his wife would celebrate their 60th wedding anniversary, and he wanted to look nice.

When I saw my patient's photo in the local newspaper some weeks later, he looked great. I was proud of "our" teeth. But my pride was considerably deflated when the patient came into the office a few days afterwards and wanted his money and old teeth back. Clearly, I had been "took," but I stuck by my 30-day guarantee. Almost 15 years later, I still chuckle when I think about how I failed Dr. Hart's Principle Number One and paid the price.

I suppose the ethics of my guarantee arrangement could be debated for hours on end. But codes of ethics do not pivot on a single clause. They are living, evolving documents that have been woven by generations of behavior.

To me, a simple, short paragraph in the preamble of the CDA Code of Ethics captures its essence: "A dentist's foremost responsibility is to the patient. Dentistry is a profession, in part, because the decisions of its members involve moral choices. Every dental practitioner makes decisions that involve choices between conflicting values while providing care for patients..."

These are words that Timothy Eaton would have easily understood. ■

P. Ralph Crawford, BA, DMD
Editor of the *Journal of the Canadian Dental Association*

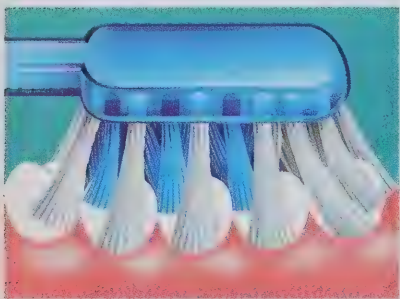
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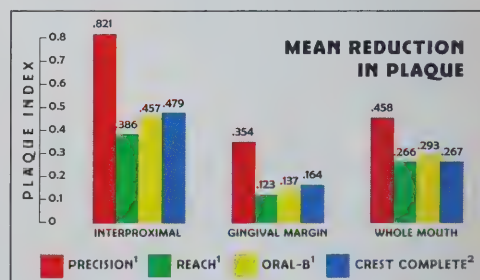
Your patients will probably tell you how good Precision feels when they brush because its long, soft, angled outer bristles

sweep plaque from the gingival margin, yet treat tender sulcus areas with care.

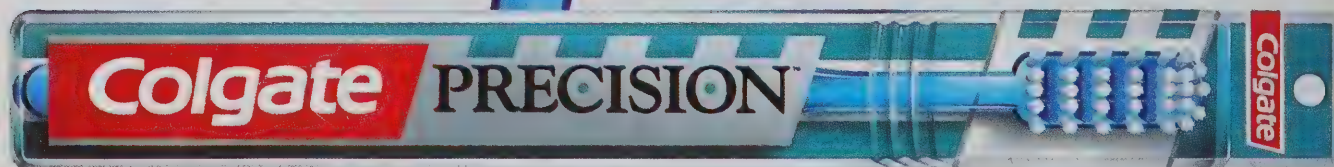
The short inner bristles gently scrub tooth surfaces, while long inner bristles reach deep to clean between teeth.

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1. Sharma, N. et al., BioSci Research, Canada, Journal of Clinical Dentistry, Vol. III, Suppl C: C13 – C20, 1992. 2. Balonyk T.E. et al., Journal of Clinical Dentistry, Vol. IV, Suppl D: D8 – D12, 1993. (Plaque Index values for Precision: Interproximal = 0.763; Gingival Margin = 0.380; Whole Mouth = 0.412).

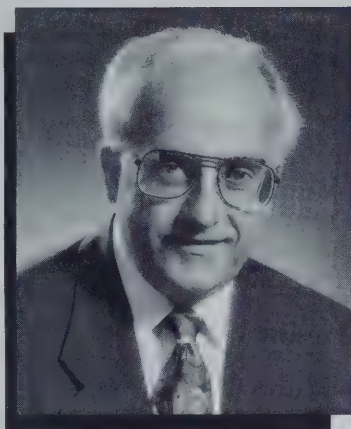


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Dr. Raymond Wenn,
President of CDA

Dentists in British Columbia, the Prairie provinces and Atlantic Canada are probably wondering why I've chosen membership as the topic for my first President's Column. Some of them may even throw up their hands and say, "Here we go again. Quebec and Ontario have stolen the show."

I honestly believe, however, that maintaining and increasing membership in Quebec and Ontario, as well as in the rest of Canada, is critical to CDA's future. CDA cannot survive as a strong and effective national association without the support of members. And without CDA standing behind us, I believe that we, as individual dentists, would face increasingly difficult times. Our professional careers would suffer.

Many CDA members have listened to this membership message before. Certainly, they've heard that CDA has grown into a finely-tuned, well-run organization that gives credibility and authority to the dental profession. And they know that both government and the public now look to CDA to speak on behalf of organized dentistry in Canada.

CDA members also know that their national association provides

a wide range of more tangible benefits. Things like a monthly scientific journal, a newsletter, 14 insurance plans, a library and resource centre, an annual dental meeting, accreditation and professional services, and more. All of these programs and services are outlined in detail in CDA's *Member Services Guide*. It should be clear to every dentist who reads the guide that membership in CDA provides excellent value for the money.

Every dentist in Canada should also recognize the fairness of universal membership in their national dental association. Most CDA programs and activities — despite the association's renewed dedication to meeting member needs — benefit the dental profession as a whole. But as we know only too well, membership in CDA is not universal. In fact, one-third of Canadian dentists aren't members, and this number is growing.

This should be a major concern to all of us, regardless of where we practise. When only two-thirds of Canadian dentists are contributing to the well-being of our profession, something is very, very wrong. Joining CDA isn't the same as buying a car or a house. It's not just about obtaining value for the money, or special deals on goods and services, although all of these things are perks that make membership in CDA more attractive.

In reality, membership in CDA should be viewed as a matter of professional pride and professional necessity. If the percentage of dentists who choose to join CDA continues to decline, the day will come when CDA will no longer be able to act as the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada. And if that ever happens, it won't only be the dentists in Quebec and Ontario who will suffer the consequences, it will be all of us.

Last year, CDA established a working group on membership concerns to develop recommendations that would, among other things, lead to some form of universal membership in CDA. At worst, the committee hopes to come up with

a formula that will lead to a more equal sharing of costs, among all the dentists of Canada, for the many programs and services that CDA provides to the dental profession.

In an ideal world, this committee would not be necessary. Every dentist would recognize the debt that he or she owes to dentistry for the typically above average lifestyle, high profile, and public respect that we all enjoy. All of us would recognize that these advantages did not simply fall into our lap, but are actually the end-product of years of hard work by the people who came before us. We would be ready and willing to shoulder the responsibility for maintaining and improving the status that our predecessors fought so hard to win for our profession.

I recognize that there are many ways to give something back to dentistry, but the most basic and important way is to ensure that CDA remains strong, unified and enfranchised with the power to represent our collective thoughts and positions. Take a moment to think about where we would be, as dentists, if CDA was not there to provide a forum for national debate on the issues that concern the profession, or to speak with a unified voice on its behalf. I think you'll agree that if Dr. Eudore Dubeau hadn't called on like-minded dentists to meet in Montreal in 1902 to found a national dental association, someone else would have seized the initiative. And if there were no CDA today, we would be meeting to form such an organization.

As CDA members, it is incumbent on all of us to encourage non-members to join their national and provincial dental associations. We must make them aware of the value of membership.

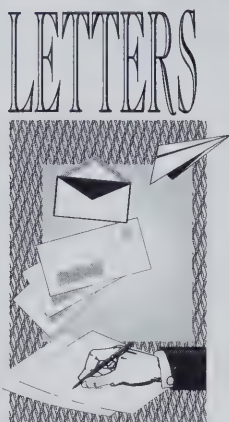
If you are a CDA member, thank you for your support and commitment. It's people like you who make dentistry a rewarding, satisfying profession. If you are not a member, please join today.

Raymond Wenn, DDS
President of the Canadian
Dental Association

JOURNAL

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Octobre
1993
Vol. 59
No. 10

LETTERS



Fluoride Dentifrices

Recently, a two-page advertisement appeared in the *Journal of the Canadian Dental Association* (59(7):596-597), sponsored by Procter and Gamble Co., claiming an anti-carries superiority for dentifrices containing sodium fluoride (NaF) as compared to those with sodium monofluoro phosphate (SMFP).

There is no scientifically valid support for these superiority claims. Further, the study by Dr. Soparker et al, recently published in abstract form in the *Journal of Dental Research*, resoundingly refutes Procter and Gamble's claim and provides the most recent clinical evidence that dentifrices containing NaF or SMFP are equally effective.

The claims of superiority made in the advertisement are based on a statistical analysis (meta-analysis) of historical, pooled data. Lumping of clinical trials that were not initiated "with the notion of meta-analysis in mind from the outset," and using these as a substitute for larger clinical studies, is not scientifically acceptable. Meta-analysis used for the purpose of claiming therapeutic superiority is inappropriate and is not accepted by the U.S. Food and Drug Association (FDA) or the American Dental Association.

The Canadian Dental Association has, in the past, refused to sanction a position of superiority of one

dentifrice over another because of inadequate clinical evidence.

I request that you consider publishing appropriate material that will serve to inform readers and correct the misleading information contained in the Procter and Gamble advertisement.

Gordon Nikiforuk, DDS, M.Sc.,
FRCD
Professional Relations,
Colgate-Palmolive Canada Inc.

The Whole Truth or Nothing?, A Tale of Misinformed Consent

Dr. Derek Jones spends a lot of time and energy criticizing medical scientific articles that show the ill effects of mercury amalgam on general health and reassuring the dental profession about the relative safety of this material. I appreciate his work.

Although I disagree with Dr. Jones' conclusions on this subject, in general, I do agree with the conclusion of his recent article in the *Journal of the CDA*, "The Whole Truth or Nothing?, A Tale of Misinformed Consent" (59(7):592-595). He states:

"If dentists are to warn patients about the hazards of mercury in dental amalgam, they must in all honesty and fairness, also warn them against the dangers posed by many other dental materials, as well as many of the procedures, techniques and pharmaceuticals now used in dentistry."

I applaud his consideration and respect for the dental patient. Our profession has no right to prescribe any treatment without thoroughly discussing the secondary effects, risks and alternatives with the patient. Doctors and dentists cannot take responsibility for these patients' health: ultimately this responsibility must lie with the patient guided by his health practitioner.

We are not gods. Quoting Dr. Jones: "...absolute scientific proof does not exist at all..." and our patients must be made aware of this.

I say more disclaimers are needed objectively showing what science knows and doesn't know concerning many of the controversial materials used in dentistry today. This is the kind of support I would appreciate from my national dental association.

Pierre Larose, DDS
St.-Laurent, Que.

CDIP Malpractice Insurance is Cost Effective and Competitive

The writer of the brief summary of 1993 malpractice insurance premiums (In: "Insurance and the Associate," *J Can Dent Assoc* 59(7):585-586) is either unaware of, or has ignored, the following facts:

1. It is true that a dentist in British Columbia, for example, pays \$645 for \$2-million coverage. However, as the administrative portion of the Canadian Dentists' Insurance Program (CDIP) fee is subject to GST, a further \$6 is paid to the federal government in taxes. In Ontario, the entire professional liability program (PLP) assessment is paid into the PLP fund.

2. Over the first 20 years of operation, the professional liability program accumulated a contingency fund of \$8.8 million. This serves to protect the profession against the vagaries of the insurance marketplace. Readers who recall the increase in CDIP disability premiums last year will understand the importance of this protection.

3. The 1993 CDIP premium is less than the Royal College of Dental Surgeons of Ontario (RCDS) assessment. However, the big picture reveals that from 1978 to 1993, Ontario dentists have paid \$5,546 for basic malpractice coverage. Equivalent coverage under CDIP would have cost \$6,137.94.

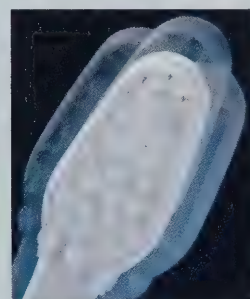
Richard M. Beyers, DDS
President, Royal College of Dental Surgeons of Ontario

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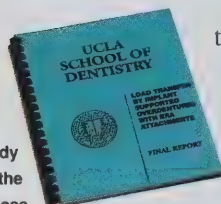
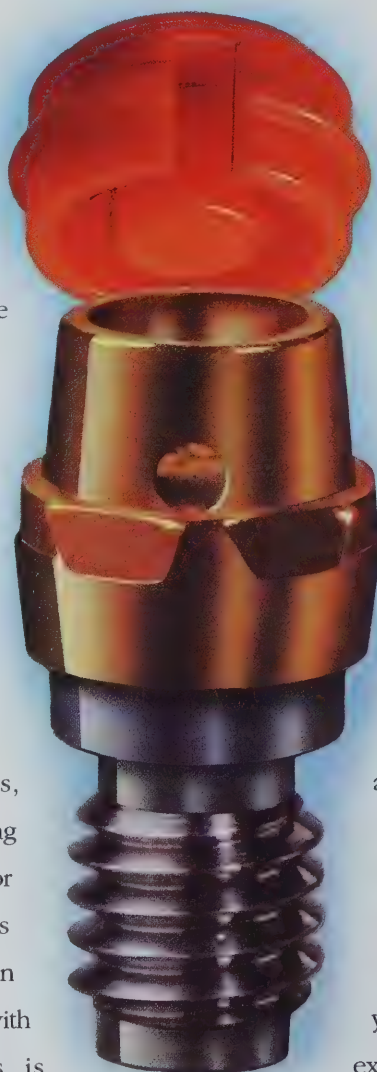
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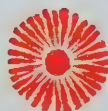
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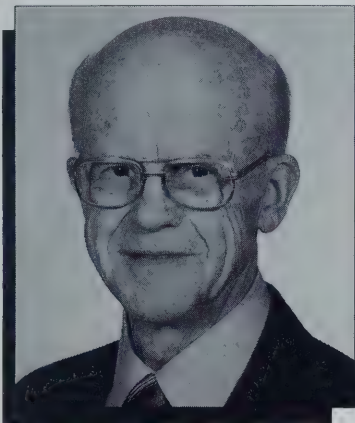
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Dr. Gerald Stibbs Passes at Age 83



Dr. Gerald Stibbs

The man who many considered to be Canada's foremost authority on restorative dentistry is dead. Dr. Gerald Stibbs died July 4, less than a year after retiring from a 61-year career in dentistry.

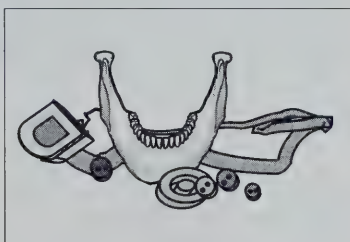
A 1931 graduate of North Pacific College in Portland, Oregon, Dr. Stibbs first practised in Nakusp, British Columbia. He soon moved to Vancouver, however, where he met and became friends with Dr. W.J. Ferrier. At the time, Dr. Ferrier was developing a new technique for gold foils. Able to work gold equally well with his left or right hand, Dr. Stibbs became Dr. Ferrier's star pupil.

It wasn't long before Dr. Stibbs became recognized as an authority in gold foil restorations in his own right. Eventually, Dr. Stibbs' skill drew him south of the border. He was asked to participate in the planning of a new dental school at the University of Washington, and in 1948 he accepted an appointment as professor of operative dentistry. Within two years, Dr. Stibbs had developed the school's first graduate program in operative and restorative dentistry. But he didn't stop there. Twenty-four years later, the University of Washington appointed Dr. Stibbs as professor emeritus and guest lecturer in restorative dentistry. In the interim, he wrote more

than 60 papers and six textbooks, and spoke at numerous dental conventions around the world.

Dr. Stibbs was a past-president of the B.C. Dental Association, the American Academy of Gold Foil Operators, and the Vancouver and District Dental Society, among other organizations. His remarkable mind and his remarkable skill as a teacher and clinician will be missed. ■

Mandible Key To Solving Historical Mystery



A mandible found in an unmarked South American grave may solve the mystery of Butch Cassidy and the Sundance Kid — the leaders

of the famous Hole In the Wall Gang.

According to legend, the two outlaws fled to South America around the turn of the century, when Pinkerton detectives made robbing trains a risky business in the United States. In 1908 the duo were killed in a shootout with Bolivian troops.

Now, researchers believe that a mandible found in San Vicente, a small town in Bolivia, may have belonged to either Butch Cassidy or the Sundance Kid. The mandible was exhumed from an unmarked grave, along with a collection of metal buttons, boot fragments and other artifacts that marked its former owner as an outsider.

Led by Clyde Snow, the research team has brought the remains back to the United States for further study, including DNA analysis. So far at least, the available evidence indicates that the mandible belonged to one of the outlaws.

Snow's work to solve the mystery of Butch Cassidy and the Sundance Kid will be the subject of a special documentary on the PBS television

Students Raise Funds For Disabled Children

Dental students from the University of Western Ontario have raised \$1,000 to assist disabled children. More than 80 students participated

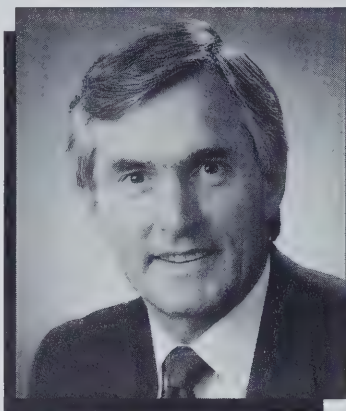
in the recent Thames Valley Auxiliary Holiday Home Tour to raise the funds. ■



Participants in the fund-raising drive included: Dr. W.R. Teteruck, faculty advisor; Robert Shaban, 1993-94 DDS class president; Mark Eckler, 1992-93 DDS class president; Ben Freedman, 3rd year class president; Lillian Reid, Holiday Home Tour Convenor; Michael Jackson, 2nd year class president; Joyce Furtney, president, Women's Auxiliary, Thames Valley Children's Centre; and Diederik Millenaar, 1st year class president.

network October 12, when NOVA presents "Wanted: Butch and Sundance." ■

B.C. Elects New Officers



Dr. Marke Pedersen

Dr. Marke Pedersen of Vernon, B.C., has been elected to serve a second term as the president of the College of Dental Surgeons of British Columbia. Other officers for 1993-94 include: Dr. Don Scramstad (vice-president), Dr. Larry Rossoff (vice-president), and Dr. John Fraser (treasurer). ■

New Concerns Over Fluoride

Researchers at the University of Chicago Medical Centre believe that fluoride may have been a factor in the deaths of three patients who underwent kidney dialysis at an off-site facility in July.

Preliminary findings indicate that the deaths were caused by acute exposure to excess fluoride, which was contained in the water used during the dialysis process.

But researchers are still not clear how the excess fluoride got into the water, or why it was there. Before it is used in a dialysis system, water must be carefully purified. Fluoride is just one of the many elements that are generally removed from the water during the purification process.

The dialysis facility where the deaths occurred will remain closed until all of its water purification units have been tested.

In normal circumstances, the level of fluoride found in drinking water is completely harmless. However, while even a "heavy drinker" is unlikely to consume more than 3.5 gallons of water per week, a dialysis patient goes through about 300 gallons. ■

Dragon Drillers improve

After finishing in the middle of the pack in the first Canadian International Dragon Boat Festival last year, the Dragon Drillers rebounded with a seventh-place performance in the 1993 edition.

The Dragon Drillers were established by the Chinese Canadian Dental Society of British Columbia in 1992 to commemorate the achievements of Dr. S. Wah Leung, its honorary president and founding dean of the University of British Columbia dental school. Sponsorship for the team is provided by the College of Dental Surgeons of B.C., the Chinese Canadian Dental Society of B.C., Hoechst-Roussel Canadian Inc., Ash Temple Ltd., Nobelpharma Canada, Aurum Ceramic, Fine Arts Dental Laboratories and Bisco Canada.

While the emphasis was on racing, the team also brought a special dental health message to the 1993

dragon boat festival. With "Live Bob," the CDA mascot, starring in the lead role, the Dragon Drillers participated in a fun skit on dental health. ■

RCDS Celebrates 125th Anniversary With Commemorative Book

The Royal College of Dental Surgeons of Ontario has published a special 32-page book to commemorate its 125th anniversary.

Produced in a soft-cover format, the book highlights the history of the college from its humble beginnings in 1868 to the present day. It also recognizes the individual dentists who made significant contributions to RCDS over the years.

Brought into being by an Act of the Ontario legislature, the college was incorporated to establish "a certain standard of qualification required by each person practising the profession or calling of dentistry" in the province. In addition, it was to ensure that "persons so practising shall be examined by a competent board as to their qualifications to practice the said profession or calling."

Not surprisingly, some dentists were against the Act. At the time, there was no formal dental education in Ontario. Prospective dentists usually apprenticed with an established practitioner before setting up



The Dragon Drillers



The Royal College of Dental Surgeons of Ontario located at 93 College Street, Toronto, opened on October 1, 1886. Built by Ontario dentists at a cost of \$50,000, the new school's three year program had an enrolment of 135 students.

their own practice. While the Act granted recognition without examination to dentists who had been constantly engaged in established office practice for at least five years, it effectively required itinerant dentists to pass an examination or cease practice.

RCDS issued its first license July 23, 1868, but it would not found a viable dental school until 1875. That delay resulted from the establishment of a private dental school in 1868, as well as a failed attempt by RCDS to launch its own school in 1869. That facility, which offered a six-month program, closed in 1870. It had graduated two students and incurred an operating deficit of \$125. Very little is known about the private school, but it is believed to have closed in 1870 — if it ever really got off the ground at all.

From 1875 until 1892, RCDS operated the only dental school in Canada. From its humble beginnings — the school's initial faculty was comprised of two lecturers — RCDS grew and prospered. In 1887, the college reached an affiliation agreement with the University of Toronto, who took over part of the teaching responsibilities and agreed to grant successful students a doctorate degree.

Another period of expansion followed, with RCDS continuing to operate the school on behalf of the

dentists of Ontario. In 1925, however, RCDS members agreed that the dental school should become a full-fledged faculty of the University of Toronto, and the teaching school of the Royal College of Dental Surgeons passed into history. RCDS maintained its licensing function, and is now the dental licensing body for Ontario.

Dentists interested in reading the full story of the college and the people behind it should contact: the Royal College of Dental Surgeons of Ontario, 6 Crescent Road, Toronto, ON M4W 1T1. ■

Correction

In the "News Update" section of the August 1993 *CDA Journal* (59:650-656), there was an error in a story entitled "Ontario Hydro Now On-Line With CDAnet." The story stated that Ontario Hydro will now allow claims submitted by employees whose dental plans are with *Great West Life Assurance* to be processed on the CDAnet system. In fact, Ontario Hydro will now allow claims submitted by employees whose dental plans are with *Prudential Insurance of America* to be processed on the CDAnet system. The *Journal* regrets this error, and apologizes to Great West Life and Prudential for any inconvenience it may have caused.

"WHAT'S IT?"

This month's "What's It?" like many of the artifacts sent to the CDA Museum, arrived unlabelled, contained in a cardboard box along with a variety of dental armamentarium. There was nothing to indicate what was its vintage or what it was used for.



Well constructed of highly-polished wood, the object is 11 mm long and 3.5 mm high. Four components of various sizes have spring devices that move a table up and down and a removable pin that locks the table in place.

The object resembles a parking meter change device, but we doubt if the original owner of this "What's It?", even owned a car. If they did, we're quite sure that there were no parking meters around back then.

If you can identify this item, please contact Dr. Ralph Crawford, Editor of the *Journal of the CDA*, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. ■

JOURNAL

October/
Octobre
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Vol. 59
No. 10

What's New In the Library This Month?

Breast Feeding, Bottle Feeding and Dental Caries

This month's library package features articles on breast and bottle feeding and the incidence of dental caries. The package is available to all CDA members at a cost of \$5 per package (plus applicable taxes). To obtain your copy, call Diana Garami, Marsha Maslove or Luc-Emmanuel Pinard at: 1-800-267-6354 or 613-523-1770, ext. 234., or fax us at: 613-523-7736.



The articles included in this month's package were located through a MEDLINE search. Member dentists who are interested in obtaining articles or abstracts on specific topics may contact the library to order a personalized MEDLINE search.

1. Barnes, G.P. and others. "Ethnicity, location, age, and fluoridation factors in baby bottle tooth decay and caries prevalence of Head Start children." *Public Health Rep* 1992; 107(2):167-73.
2. Crow, D.R. "Baby bottle tooth decay prevention — a new program for the Texas Department of Health." *Tex Dent J* 1992; 109(8):141.
3. Degano, M.P. and Degano, R.A. "Breastfeeding and oral health. A primer for the dental practitioner." *N.Y. State Dent J* 1993; 59(2):30-2.
4. Eronat, N. and Eden E. "A comparative study of some influencing factors of rampant or nursing caries in preschool children." *J Clin Pediatr Dent* 1992; 16(4):275-9.
5. Grindefjord, M. and others. "Prevalence of mutans streptococci in one-year-old children." *Oral Microbiol & Immunol* 1991; 6(5):280-3.
6. Hashim Nainar, S.M. "Nursing caries: an overview." *J Conn State Dent Assoc* 1990; 66(2):34-7.
7. Koranyi, K. and others. "Nursing bottle weaning and prevention of dental caries: a survey of pediatricians." *Pediatr Dent* 1991; 13(1):32-4.
8. Liu, J. "Neglected problem: nursing bottle syndrome." *Dentistry (Loma Linda, CA)* 1990-91; 3(2):57-8.
9. Marino, R.V. and others. "Nursing bottle caries: characteristics of children at risk." *Clin Pediatr* 1989; 28(3):129-31.

10. Matee, M.I. and others. "Mutans streptococci and lactobacilli in breast-fed children with rampant caries." *Caries Res* 1992; 26(3):183-7.
11. McIntosh, E.A. and others. "Survey of dentists in the Ottawa-Carleton region concerning nursing bottle syndrome." *Can J Public Health* 1991; 82(5):349-50.
12. Schulte, J.R. and others. "Early childhood tooth decay. Pediatric interventions." *Clin Pediatr* 1992; 31(12):727-30.
13. Schwartz, S.S. and others. "A child's sleeping habit as a cause of nursing caries." *ASDC J Dent Child* 1993; 60(1):22-5.
14. Vignarajah, S. and Williams, G.A. "Prevalence of dental caries and enamel defects in the primary dentition of Antiguan pre-school children aged 3-4 years including an assessment of their habits." *Community Dent Health* 1992; 9(4):349-60.
15. Westover, K.M. and others. "The relationship of breastfeeding to oral development and dental concerns." *ASDC J Dent Child* 1989; 56(2):140-3.
16. Yagot, K. and others. "Prolonged nursing-habit caries index." *J Int Assoc Dent Child* 1990; 20(1):8-10.

Recent Acquisitions

The following texts have been received by the library and are available for loan to CDA members at a cost of \$5, shipping and handling included. (Borrowing privileges are only available to members of CDA.)

1. American Academy of Orofacial Pain and McNeill, C. ed. *Temporo-mandibular disorders : Guidelines for classification, assessment and*

management. 2nd ed. Quintessence : 1993.

2. American Association of Dental Schools. *Admission requirements of U.S. and Canadian dental schools*. A.A.D.S. : 1989.

3. Haga, M. and Nakazawa, A. *Techniques for porcelain laminate veneers*. IEA : 1990.

4. Howe, G.L. *The extraction of teeth*. 2nd ed. John Wright : 1970.

5. Jedyakiewicz, N. *CAD-CAM in restorative dentistry : The Cerec method*. Liverpool Univ Press : 1993.

6. Keng, S. and Loh, H. eds. *Directory of dental schools and research*. SEAADE : 1992.

7. Kitamura, H. ed. and others. *Color atlas of human oral histology*. IEA : 1992.

8. Orland, F.J. *William John Gies : his contribution to the advancement of dentistry*. William J. Gies Foundation for the Advancement of Dentistry : 1992.

9. Scully, C. *Patient care : a dental surgeon's guide*. 2nd ed. British Dental Journal : 1989.

10. Shiba, A. *The conical double-crown telescopic removable periodontic prosthesis*. IEA : 1993.

11. Shosenberg, J.W. *The rise of the Ontario Dental Assoc*. ODA : 1992.

12. Stean, H. *Aesthetic dentistry with indirect resins*. Quintessence : 1992.

13. Stockdale, C.R. *Endodontic surgery*. Quintessence : 1992.

14. Taddey, J. and others. *TMJ : the self-help program*. Surrey Rock Press : 1990.

15. Tay, W.M. *Resin-bonded bridges — a practitioner's guide*. Martin Dunitz : 1992.

Videos

Two new videos have also been added to the CDA collection. These are available for loan at a cost of \$5 per video, which includes return postage. A complete list of the library's audiovisual collection is available by calling 1-800-267-6354, ext. 223.

1. American Dental Association. *Careers in Dentistry*.
2. American Dental Association. *Dudley's classroom adventure*.



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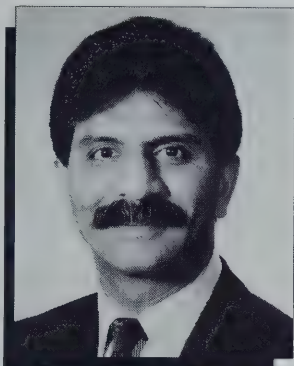
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PRACTICE MANAGEMENT & SUCCESS



Achieving Success: Moving Beyond the Comfort Level

Imtiaz Manji, B.Sc.,
President of ExperDent

The following article is excerpted from CDA's new practice management program, *Taking Care of Business*. A joint venture between CDA and ExperDent Consultants Inc., the program will consist of a series of information-packed books. The first book in the series is due to be released this fall. What follows is part one of a two-part column on the Dental Career Cycle. Part two will run in November.

Although no two dentists are exactly alike, the careers of most dentists follow a similar pattern. Most dentists start out in positions with adequate opportunities and eventually provide themselves with a moderate income. But few dentists carry through to achieve the level of success that matches their abilities.

Unfortunately, because the majority of dentists do not focus on their true potential, they never realize the full value of practising dentistry. Instead, they lower their sights to an arbitrary production figure or income at which they feel reasonably satisfied or comfortable. And, as we'll see, dentists forfeit a great deal when they enter the danger zone of comfort and complacency.

The graph opposite shows how the relative income of an average dentist may evolve from graduation to retirement.

It clearly reveals a period of rapid growth following graduation, a peak productivity, and a gradual slow down until retirement. You'll also notice two important lines — the comfort level and the saturation level — which represent the most common motivations for practice growth.

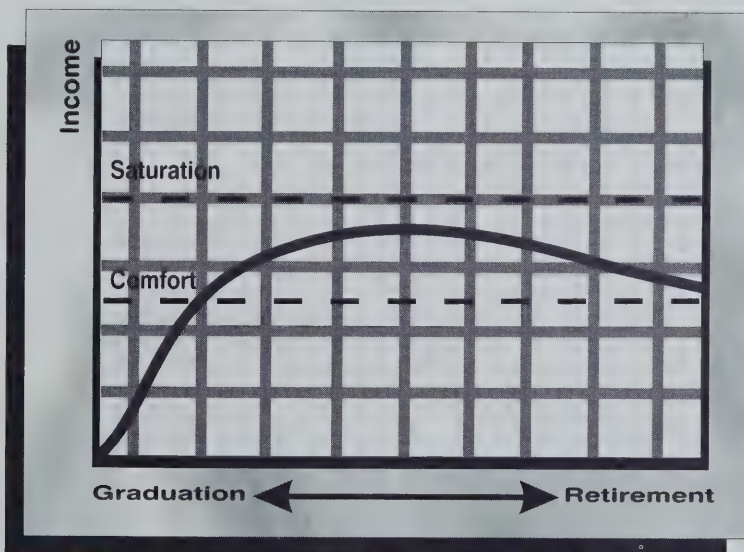
Understanding the Comfort Level

Most dentists are motivated by their personal comfort level, the level of productivity required to feel reasonably satisfied with their career. That means their practice is achieving a basic level of productivity that they deem necessary, and the dentist is able to draw an in-

come that generally meets their expected lifestyle.

New dentists work hard in the early part of their careers to build their practice to a comfortable level. After several years, most dentists achieve a reasonable level of success in their practice. As a result, the typical dentist is able to provide sufficient financial resources to adequately support their family and meet their personal needs.

The comfort level of a dentist can change for a number of reasons. For example, the comfort level can decrease as debt is paid off. When this happens, the dentist requires less income to maintain their expected lifestyle. Similarly, the comfort level can increase if new debt is



JOURNAL

October/
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Vol. 59
No. 10



assumed. If a dentist moves to a new home (perhaps to accommodate a growing family), this can increase their personal financial needs and the comfort level of the practice will likewise increase. Sometimes, trade-offs have to be made; if a dentist wants to spend less time in practice (due to personal, family or other reasons), they may be forced to lower their comfort level if the practice cannot support them based on the hours they want to work.

The average practice can achieve the comfort level of the dentist through effective practice management — providing the patient base is available. For most dentists, the comfort level is their “anxiety point.” If the practice is unable to meet the comfort level, the dentist places continuous emphasis on effective management strategies and new patient flow.

However, the motivation to improve the productivity of the practice often falls off once the practice has exceeded the comfort level. Since the dentist is achieving their basic financial goals in their practice, there is no urgency for continued practice growth. The dentist may relax and coast along until productivity again falls below the magical “comfort level.” This can lead to a see-saw effect when a dentist works, then relaxes, then works, then relaxes as the productivity of the practice cycles below and above their comfort level.

Understanding the Saturation Point

While the comfort level is focused on meeting needs, the saturation point is focused on ability. Since most dentists are only motivated by their needs, few achieve the maximum benefits of practising dentistry. To reach your full potential as a practising dentist, you must be motivated primarily by your ability and saturation.

Simply put, the saturation point is the so-called glass ceiling that limits the productivity you can achieve with your own hands. You may have spent years developing, refining and honing your skills to provide good quality dentistry, but

your hands alone determine your potential and your maximum personal productivity. Most dentists achieve a level of productivity that exceeds their comfort level but falls short of saturation.

Essentially, saturation occurs when a dentist is working as quickly and for as many hours as they can reasonably manage. Furthermore, the dentist's patient base is sufficiently large that they can easily appoint all the hours they choose to schedule. The dentist also has more new patients per month than they need to maintain their patient base and productivity.

To summarize, saturation is reached when the treatment needs of a growing patient base exceed the ability of the dentist to service them. At this point, the dentist has excess wealth in their practice. They have more patients and more opportunity for growth than they are able to manage or exploit on their own. Below are the general conditions that you can use to determine if you are at saturation:

- You would be uncomfortable providing treatment at a speed faster than you already are.
- You would be uncomfortable working more hours per week than you already are.
- Your schedule is fully appointed several weeks in advance.
- Your practice receives more new patients each month than it needs to maintain productivity, the schedule and the patient base.
- You are confident that no other management techniques could make an appreciable improvement on your productivity.
- The productivity of your practice has peaked but is not declining.
- Your practice is profitable.

By definition, once you have reached saturation, you will not be able to increase your personal productivity. You are being limited solely by the ability and capacity of

your hands. At this point, transitions become important if you want to capitalize on the value of your practice. If you choose not to make a transition, you must realize that your practice has reached its maximum value. Your patients will find other practitioners if you don't service them.

Therefore, you have a simple decision to make at saturation: Do you want to make a transition that will meet patient needs, increase the value of your practice and maximize your benefits? Or, do you want patients to leave your practice, limit your practice value and let your potential slip away unrealized?

The Road Less Travelled

In any business, profitability is the difference between revenue and expenses. To increase profitability from one month to the next, either production must rise or expenses must fall. Depending on the nature of a business, it may be easier to cut costs than to increase revenue, or vice versa. In dentistry, it is far easier to increase production. Most of the costs in a dental practice are fixed so a dentist has relatively little leeway here. They may be able to control costs, but cutting back isn't always a possibility.

By contrast, production in a dental practice can be increased in a huge number of ways, ranging from improved patient flow to higher case acceptance rates. Managing and improving production is the primary focus of effective practice management. For these reasons, every dentist must be committed to superlative practice management. New dentists who master practice management skills early in their career invariably achieve success sooner than those who don't.

Here are the guidelines you should use to manage the profitability of your practice:

- Use your comfort level to set your goals for expense management, debt load and overheads.
- Use your saturation point to set your goals for productivity, patient flow and practice management.



Dentists who understand their full potential and are committed to reach their saturation level (not simply their comfort level) achieve a degree of success that few dentists manage. This should be the goal for all dentists. However, as mentioned earlier, most dentists

are motivated primarily by their comfort level — both expenses and production. Early in their career, they work hard to master their clinical and management skills so they can achieve the income they want. The problem is that most dentists become complacent once they

have achieved a comfortable standard in their practice. It is only when they reach their peak productivity that they begin to wonder how to continue growth. With foresight, planning and hard work, dentists can harness this potential. ■

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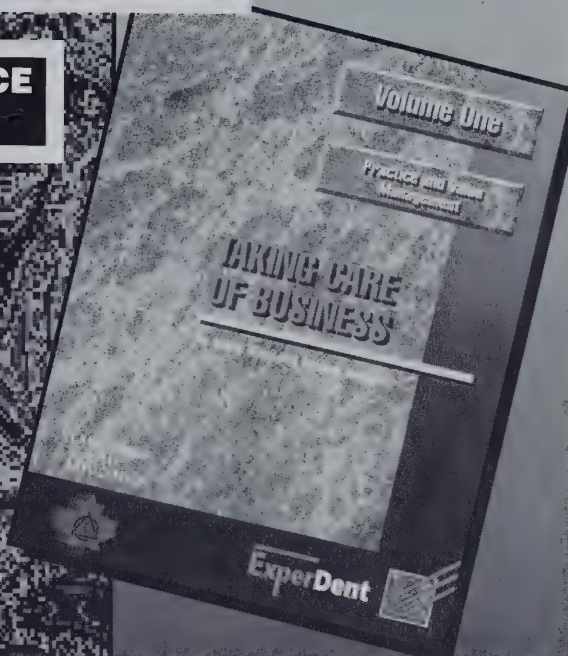
Montréal, Québec
New Graduate — 1993

"It amazes us how relevant this information is to both new graduate dentists and long-time practitioners. We applaud CDA and ExperDent for their initiative, although we feel you may have given away too much of your valuable information."

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"I have just completed my review of Taking Care of Business, Volume 1, and I want to say that Practice Management and Value Appraisal is outstanding. Management comes to mind. I am aware of no source for similar material that is as all encompassing, thorough and timely."

Duncan, B.C.
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This year, the Canadian Dental Association, in partnership with ExperDent Consultants, will launch "Taking Care of Business", its unique new Practice Management Program, for both new grads and established members of the profession. Two volumes of Program materials and practical information will be available to CDA members on:

- Practice Management and Value Appraisal
- Associate and Transition Planning

Watch for further information in both the CDA Journal and Communiqué and find out why those dentists who've previewed these materials feel that it's like "having an MBA in your back pocket".



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October/
Octobre
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Vol. 59
No. 10

A Bold New Look — For a Good Idea That's Getting Better.



Take a look at CDSPI's new logo.

It's a bold new way to declare our commitment to serving Canadian dentists. And to proudly emphasize our close relationship with the CDA and provincial dental associations.

But what's behind our new logo is even more exciting. Our new look heralds a fresh new approach to serving you. After 35 years of providing superior products and services especially for dentists — CDSPI is striving to deliver even more.

We're taking a good hard look at how we can

enhance all areas of our company...from our structure...to our products...to the way we communicate with dentists. And we're asking dentists to tell us how we can serve them better.

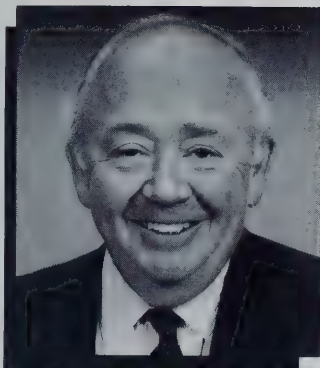
This effort will translate into improved products and services for you. It will make your insurance and investment planning easier — and more effective. And reconfirm CDSPI's unique position as *the* service organization "by dentists for dentists".

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A New Corporate Logo

Dr. Rod Moran, President of CDSPI

This article is taken from the report Dr. Rod Moran, the chairman of CDA's council on insurance and investment and president of Canadian Dental Services Plans Inc. (CDSPI), gave to the CDA board of governors at their September 10-11, 1993, annual meeting.

As president of CDSPI, I am pleased to unveil our new corporate logo, and with it a new approach to serving dentists.

A logo isn't something you replace lightly. A lot of thought and effort go into producing it, not to mention the work of changing all the stationery and other materials which display it. But we've changed our logo for all the right reasons.

Our new logo better represents what CDSPI does — and is. The maple leaf symbolizes our national scope and our commitment to serve participants from coast to coast. And the stylized caduceus within the leaf represents organized dentistry, and recognizes dentists as both our owners and our customers.

How these symbols are presented is equally significant. The style of the CDSPI name is a link to the old logo and our highly productive past. At the same time, the bright red and modern styling of the design announce that we're an exciting, forward-looking organization.

The logo also reflects the symbols used by CDA and the provincial dental associations. For instance, the leaf is a "second cousin" to the one in CDA's logo. And the single entwined snake in the centre alludes to those in provincial symbols. By emphasizing such design elements, we're proudly declaring our close relationship with our sponsoring associations.



These are all good reasons to introduce our new logo, but this isn't just a new look for CDSPI. It's also a symbol of our renewed commitment to serving dentists. After 35 years of providing superior products and services especially for dentists, CDSPI is determined to do even better.

We're taking a good look at all aspects of CDSPI: its structure, services, and methods of communicat-

ing with dentists — from the broadest policies to the smallest administrative details. And we're asking how we can enhance each of these parts and make them work better together, to deliver improved service.

We're not talking a little adjustment here, a little remodelling there. It's a whole new mentality for CDSPI — and a fresh way of approaching service. We're prepared to go as far as it takes. We'll tear down and rebuild any aspect of the company, if it will make CDSPI more responsive and efficient.

We won't rely just on internal ideas to do this. We want to know what today's dentists need from us, so we'll be asking them to tell us through organizations such as CDA, the provincial associations and local dental societies. We'll also learn through direct contact with local practitioners and dental students.

This drive for greater contact with dentists won't be a one-time effort. It's an ongoing process. We need more input from dentists and more communication in both directions. Quite simply, our aim is to build a true partnership with dentists to provide them with the best insurance and investment services available.

This will involve a lot of work, but we believe the results will be worth it. In the future CDSPI insurance and investment products will deliver even better content and

value; services will be more convenient and efficient; and support materials will provide exceptionally useful information on planning for financial security. All of these improvements will make dentists' insurance and investment programs easier and more effective at every stage in their careers.

The first signs of this dramatic shift are already here. You can see it in innovative products such as the CDA RIF, our new investment plan for retired dentists, in new services such as InstApply, which makes it easier to fill out insurance applications, or new procedures, such as our programs to significantly cut processing times. And there are many more good ideas in the works.

Our new logo isn't simply a "new look." It's a signal of exciting things ahead; a symbol of our commitment to superior performance; and an emblem reconfirming CDSPI's unique position as the financial services organization by dentists, for dentists.

Today, tomorrow...and in the years of service to come.



Miss Fran and Paddington Bear of Romper Room say

Look both ways before crossing the street

Don't go into strangers' houses

Don't eat treats until your parents check them.

This Halloween Support



CFDE Grant Applications Due

The deadline to apply for a CFDE dental education, research or service project grant is December 31, 1993. Each year, CFDE supports a variety of individual education, research and service projects to promote and improve the quality of dental education, and to help increase public awareness of dental care. Preference is given to projects affiliated with dental schools and dental auxiliary programs.

Applications should be submitted in letter form, and must contain a full description of the proposed project, including a budget and other funding sources.

For further information, please contact:



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Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	August 27, 1993	July 30, 1993	
Bond & Mortgage Fund	11.14204	109.44385	10.3%
Common Stock Fund	22.46127	21.46120	26.3%
Money Market Fund	65.03895	64.91595	5.5%
Balanced Fund	41.29327	40.11073	12.6%

Bond & Mortgage fund was split as follows:

Share Splits/Consolidations	Split Date	Reinvestment Price
10 for 1	August 20, 1993	110.69999

G.I.C. Fund

Term	August 27, 1993	July 30, 1993
1 yr	4.40%	4.55%
2 yr	5.25%	5.35%
3 yr	5.90%	6.10%
4 yr	6.10%	6.35%
5 yr	6.60%	6.85%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

August 27, 1993	July 30, 1993
\$187,560,099.00	\$183,435,796.00

For further information:

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CDSPI

JOURNAL

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Vol. 59
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BOOK REVIEWS

Endodontic Surgery

By C.R. Stockdale

1992, Quintessence Publishing Co., Chicago
122 pages, 66 illustrations, \$48 (U.S.)
hard cover

This short textbook, which is based on the author's 30 years of experience as a clinician and teacher, discusses endodontic surgery from a practical, clinical point of view. While it is directed toward the general practitioner, it assumes that the reader has a certain level of experience and familiarity with the subject matter. Some of the techniques described can be undertaken by an experienced general practitioner, but many require a higher degree of expertise.

The book is divided into 14 short chapters. Chapters one through eight touch very briefly on a number of subjects, including indications for surgery, anatomy, pathology, and radiology. The following chapters, written using a cookbook or how-to approach, are devoted to flap design, surgical management and postoperative care. The text concludes with discussions of failures and medicolegal considerations.

Potential readers should be aware that this is not a comprehensive textbook, in spite of the breadth of topics that the author attempts to cover. It is more of a manual of practical techniques.

One of the book's deficiencies is its lack of illustrations. Some chapters are not illustrated at all. This omission is particularly notable in Chapter 6, which covers diagnostic radiology. Even where the book contains illustrations, they are not always of the highest quality. For example, in the section on choice of surgical instruments, no specific instruments are listed or discussed. Instead, a photograph is used to show the author's tray setup (Fig. 7.1). Unfortunately, the picture is too small to allow the reader to identify any of the instruments.

Also, some illustrations are labelled incorrectly. For example, on page 50, a photograph of a rectangular flap is labelled as an envelope flap. On pages 84-86, a series of photographs show the placement of composite resin to repair a post perforation. These photographs are out of sequence, showing light curing of the resin before the resin has been placed.

There are also many errors in the actual text. These begin as early as the forward, which enthusiastically states that the "seemingly insuperable problem" of how to restore a tooth after endodontic surgery should "never arise again for anyone familiar with the subject matter of this text." The subject matter of this text, however, does not cover the restoration of teeth! In addition, the book is marred by several typographical errors, as can be expected with first editions.

The cover flap proclaims that the book "confidently communicates the clinical rationale of the author's long experience..." This is a good illustration of another of the book's shortcomings. It often expresses the author's ideas and opinions with very few references or valid scientific discussion. For example, the diagnosis of a cyst is made radiographically (p. 14), and this is used as an indication for surgery. The scientific basis for this approach is questionable. Similarly, the author confidently communicates that it is "impossible" (p. 15) and "hopeless" (p. 87) to treat perforations located on the lingual or palatal surface of a root. This is simply incorrect. The author cites his own experience when he states (p. 11) "that when no retrograde seal is placed,...healing of the periapical tissues may well take place in the first instance, but after some three to five years, apical symptoms re-present in a significant number of cases." This may be true, but it would be better if a reference were also cited.

In the discussion on why cases with no retrofilling fail, the author states that "tissue fluid stasis occurs in the crevice (between the gutta

percha and the root canal wall), and infection subsequently occurs." The same explanation of "tissue fluid stasis" is used to explain the failure of endodontic stabilizers if they fit poorly (p. 91). This is a reversion to Rickert and Dixon's hollow tube theory (1931), which was disproved in the 1960s and has no place outside of a discussion of the history of endodontics.

In conclusion, this is not a comprehensive textbook on endodontic surgery, nor is it outstanding as a clinical manual. This book may be most useful as a brief overview of the scope of endodontic surgery for the practitioner who is unfamiliar with this field. The "how-to" sections describing the simpler anterior surgical techniques are practical and safe to follow. However, other more thorough and well illustrated texts are already available and are better suited to provide the comprehensive background needed for the successful surgeon.

Reviewed by:

Howard M. Fogel, DMD, MS,
FRCD(C), demonstrator (endodontology), department of restorative dentistry, faculty of dentistry, University of Manitoba.

Diseases of the Jaws — Diagnosis and Treatment

By I. van der Waal

1991, Munksgaard, Copenhagen, Denmark
304 pages, illustrated.

This type of textbook, where a single author presents his or her views on a wide range of diseases, has become uncommon. However, single authorship has the advantage of homogeneity in style and presentation, avoids the repetition often found in multi-authored works, and provides easy reading and comprehension.

The author is an internationally recognized authority on oral pathology and a professor at the Free

JOURNAL

October/
Octobre
1993
Vol. 59
No. 10

815

University, Amsterdam. He has the advantage of writing from an extensive personal knowledge of both the clinical and histopathological aspects of the conditions described. This combination is rare in today's market, and may only be seen in oral pathologists who maintain a clinical practice and dermatopathologists.

The topics covered in the text include both the local and generalised diseases that may affect the mandible, maxilla and temporomandibular joints. These are divided into chapters on congenital and developmental disturbances, inflammatory lesions, giant cell lesions, fibrous dysplasia, cysts, neoplasms of bone, neoplasms of cartilage, other neoplasms, odontogenic tumors, systemic bone diseases, miscellaneous conditions and TMJ disorders.

The text is well written and succinct. It is improved by several clearly-reproduced illustrations,

which include clinical photographs, radiographs and CT scans. Every fully-described disease entity is organised into sections on definition and epidemiology, clinical aspects, radiographic aspects, histologic aspects and treatment. Rare conditions and diseases that only affect the jaw bone secondarily are described more briefly.

Professor van der Waal uses the World Health Organisation (WHO) nomenclature and classification of disease, as is only proper. However, he displays a sturdy independence of mind in areas where he believes that WHO classifications have unreasonably split a single pathological entity into several named subsets. For example, he believes that periapical cemental dysplasia, gigantiform cementoma, sclerotic cemental masses and florid osseous dysplasia are best considered simply as fibro-osseous cemental lesions. This personal viewpoint is evident throughout the

book and makes it considerably more interesting and stimulating than the average text.

The book also contains a very useful and extensive list of 671 references. These are culled largely from English language journals, but include many German and French publications as well (illustrating the multilinguality for which the Dutch are renowned).

This text can be recommended to everyone engaged in the investigation and treatment of diseases of the jaw, particularly, oral and maxillofacial surgeons, oral pathologists and oral radiologists.

Reviewed by:

J.H.P. Main, BDS, PhD, FRCD(C), FRC Path.

Professor and head, department of oral pathology, faculty of dentistry, University of Toronto.

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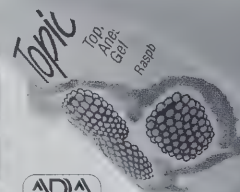
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Access and isolation problem solving in endodontics: Posterior Teeth

William H. Liebenberg, B.Sc., BDS (Rand)

ABSTRACT

Through the pictorial presentation of case studies, this paper explores the versatility of alternative methods of retention as a means of improving overall access to the endodontically-involved tooth. Successful endodontics is the result of precise biomechanical instrumentation and involves procedural manipulations that depend on a complete and unobstructed approach to the working field. This paper is aimed principally at those practitioners who would ordinarily reject rubber dam isolation in cases where the clinical pretreatment conditions are anything but ideal.

SOMMAIRE

Dans cet article, on explique à l'aide d'histoires de cas illustrées la versatilité des différents moyens de rétention utilisés pour améliorer l'accès général aux dents ayant besoin de traitements d'endodontie. Pour que ces traitements réussissent, il faut pouvoir manipuler les instruments biomécaniques avec précision et, par conséquent, pouvoir accéder au champ de travail complet sans aucun obstacle. Aussi cet article s'adresse-t-il principalement aux praticiens qui rejettent ordinairement les digues d'isolement en caoutchouc quand les conditions de prétraitement clinique ne sont nullement idéales.

Introduction

The use of rubber dam is the usual and customary mode of isolation during the delivery of endodontic treatment.¹⁻³ The very nature of the treatment implies that, in most instances, the tooth will have been heavily restored. It should come as no surprise, then, that the inherent variability of presentation constants makes endodontic isolation the most challenging isolation procedure in all branches of dentistry. To achieve the optimum isolation solution, it is often necessary to creatively adapt and modify basic isolation skills. This pictorial essay of case studies is aimed principally at those practitioners who ordinarily reject rubber dam isolation if the clinical pretreatment conditions are anything but ideal. The versatility of alternative means of retention, as a means of improving the overall access to the working field, is discussed.

Bead Retention Versus Single Clamp Application (Figs. 1a & 1b)

Clinicians usually retain rubber dam with a single clamp, placed on the tooth being treated. This approach is often the prelude to isolation dissatisfaction, as the necessary procedural manipulations are hampered by the proximity of the

isolation armamentarium. The use of extended bow clamps (Dentsply HW and Ash AD) removes this digi-



Fig. 1a: Intraoral view of tooth 36, which is to be isolated with "bead" assisted retention. Rubber plungers from discarded anesthetic carpules are secured to floss and then tied, using triple knots, to the teeth chosen as the limits of the working field.



Fig. 1b: The pre-punched four-holed medium thickness dam is then applied in the usual manner, i.e. it is stretched over the mesial and distal rubber plungers and then attached to the frame. The interdental septal pieces are then flossed into each contact area.⁸ "Over-the-dam radiography" results in a more predictable radiograph localization, which is achieved with less discomfort and distress to the patient.



Fig. 2: Isolation of a deciduous molar using rubber plungers. The improved access allows for rapid and unhindered matrix application. Matrix application can often be a cumbersome procedure due to the proximity of traditional retainers.



Fig. 3: The access requirements for thermoplastic devices exceeds that of conventional lateral condensation obturation methods. Its use in the obturation of this previously-crowned single-rooted mandibular molar called for heedful isolation preplanning.

tal restriction, as the bows are extended to lie more distally than is possible with a standard clamp.⁴ However, the range of clamps is daunting enough without adding extended clamps to the equipment litany.

A simple, disposable, quick and predictable method of retention, originally introduced by Ireland, is "bead" assisted retention.⁵ A rubber plunger from a discarded anesthetic carpule is secured to a length of floss and then tied (in single or double units) to the teeth that were chosen as the limits of the working field (**Fig. 1a**). The unyielding quality of a triple knot is fully appreciated when the floss has to be sectioned in order to remove the "bead" retainers. This initial rubber dam retention is then completed by orientating the intervening teeth with the corresponding holes in the dam and flossing the interdental septal pieces into each contact area. When the rubber dam has passed all the contacts, the gingival margins are inverted in the customary manner in order to achieve the best seal. The advantage of this clamp substitute is that the radiographic access is unrivalled. This access cannot be achieved using any other method of retention that boasts equal dam stability. Rubber dam cannot be removed to take working radiographs during endodontic treatment, and the patient is invariably left floundering with his

or her finger placed below the dam in an anesthetized quadrant.

In this technique, the dam is slackened off the frame on the opposite side, which allows for "over the dam" radiography (**Fig. 1b**). The working access is more than adequate, as there are no clamp bows to contend with. This results in an infinitely more hygienic radiographic technique, which is in keeping with current infection control practices. In addition, "over the dam" radiography results in a more predictable radiograph localization. This is achieved with less discomfort and distress to the patient, as the film is not displaced from its normal relationship to the alveolar process by the presence of the clamp.

Pedodontic Application Of "Bead Retention" (Fig. 2)

Rubber dam is much more valuable in pedodontic endodontic applications than it is in adult applications, as the factors responsible for accidental "mishaps" (such as instrument aspiration) are amplified many times. For clinicians who are uncomfortable using rubber dam-assisted isolation in the pediatric patient, the use of rubber plungers is like a breath of fresh air. It is an indisputable fact that the acceptance of rubber dam by children is directly related to the acceptance of the technique by the den-

tist. It is far easier for a fearful child to accept the placement of "little rubber bells" as opposed to a "raincoat button" with its menacing metal jaws.

Fig. 2 demonstrates the isolation approach to a pulpotomy procedure on a deciduous molar. The improved access obtained allows for rapid and unhindered matrix application. Matrix application can often be a cumbersome procedure due to the proximity of traditional retainers. Ideally, the floss-ligated plungers are tied to the teeth before the application of rubber dam. The dam is then attached to the "retainer/tooth complex" with the same action used in traditional clamp-assisted retention, i.e. the dam is stretched over the palatally-placed plunger and allowed to settle into position beneath the plunger. Digital pressure is then used to reproduce the patency of the hole, while the buccal portion of the tooth is encircled. The interdental septa are then flossed into tight contact.

Extended Access Requirements (Fig. 3)

In many cases, single tooth isolation provides sufficient access to allow for the necessary procedural manipulations involved in the delivery of an endodontic procedure. There are, however, certain instances where this approach pre-



Fig. 4a: Unobstructed visual access was a crucial working field requirement during an investigation of the non-localised pulpitis in this maxillary quadrant. Primary rubber dam retention is firstly achieved with the aid of clamps. A running floss ligature is positioned and loosely tied around the first premolar.



Fig. 4b: A second knot is then applied and pulled up tightly. The ends of the floss are not sectioned at this stage, as they will continue their circumferential passage to include the canine once the bland retainer has been removed. The unobstructed access was instrumental in diagnosing the vertical fracture running mesio-distally in the roof of the second premolar's pulp chamber.

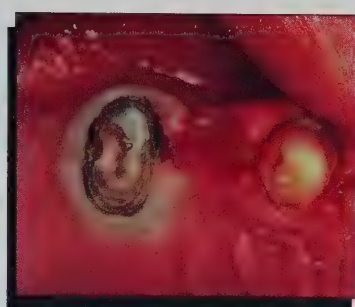


Fig. 5a: Intraoral view of a maxillary second premolar. The fixed prosthesis was removed in order to determine the extent of the carious involvement and the restorability of the remaining tooth structure. Gingival retraction cord provides radicular exposure beyond the original (now carious) subgingival crown margin.



Fig. 5b: A metal clamp provides distal retention of the dam. A sectioned 212 anterior butterfly clamp is selected as the extended bow reaches the clamp/molar combination and will be "compounded" once its jaws have engaged the subgingival crown margin of the tooth receiving endodontic attention.

cludes efficient performance due to the access proximity of the isolation armamentarium.

The access requirements for thermoplasticising- and apical-locating devices exceed those required for conventional lateral condensation obturation methods. It follows, therefore, that if these devices are to be employed, then the necessary access requirements must be taken into consideration during isolation strategy planning. Thermoplastic-assisted obturation of this previously crowned single-rooted mandibular molar called for heedful isolation preplanning. The first premolar has been restored with porcelain full coverage, hence the circumferential over-the-dam ligature arrangement. However, the margins of the porcelain fused to metal restoration of the second molar are supragingival and easily by-passed by the jaws of a well fitting "retentive" clamp.

Isolation and access solutions are as infinite as the problems that spawn them, and clinicians are reminded that there are advantages and disadvantages to all the traditional and alternative methods of rubber dam applications. In many instances, the clinician has to combine different application methods in his or her quest for the best possible solution to extended access requirements during the delivery of the endodontic option.

Figure Of Eight Ligature Retention (Figs. 4a & 4b)

When several teeth need treatment at the same time, isolation with multiple clamps can be cumbersome and may hinder the access requirements dictated by the procedure. A running ligature that is crisscrossed interproximally serves to retain the rubber dam and ensures that the edges of the dam material remain inverted throughout the duration of treatment. **Fig. 4a** shows the first part of a surgeon's knot that has been tied loosely around the first premolar, while the premolar clamp provides the initial rubber dam retention. Note the use of a "bland" clamp on the premolar. Bland clamps have flat jaws that point toward each other and are designed to grasp the tooth above the gingival margin.⁴ Compare this to the retentive clamp of **Fig. 5b**. A second knot is then applied, pulled tight, and eased gingivally as the clamp is removed.

The ends of the floss are not sectioned at this stage. Once the bland retainer has been removed, their circumferential passage will be continued to include the canine (over the dam). The resulting isolation is free of the radiographic restrictions imposed by the use of multiple clamps. In fact, once the restorations have been removed, the crowns of the teeth remain visible during radiographic evaluation. This can, on occasion, provide a crucial diagnostic advan-

tage, particularly in the investigation of non-localized pulpitis in this maxillary quadrant. In this case (**Fig. 4b**), unobstructed access is instrumental in diagnosing the vertical fracture running mesio-distally in the roof of the second premolar's pulp chamber. Note how the crisscross effect of this retention method provides interproximal septal depression. Matrices are effortlessly applied at the completion of treatment, ensuring "clean" interproximal temporisation.

Single Tooth Isolation — Complicated (Figs. 5a & 5b)

As a result of procedural access and clamp application difficulties, it is infinitely more complicated to attain adequate isolation in the posterior region than in the anterior region. Of more consequence, the more distally the tooth is situated,



Fig. 6: The value of asepsis during the endodontic treatment of this lone-standing mandibular second molar was unattainable as the existing preparation taper precluded adequate clamp retention. Small diameter stainless steel self-threading pins are placed into the buccal and lingual aspects of the residual tooth structure and serve to retain the clamp.



Fig. 7: Rubber dam retention is provided by a half clamp that was fabricated by sectioning the bows of a 212 clamp and further modified by covering the lingual jaw with the rubber plunger from a used anesthetic carpule. This lingual view demonstrates the cushioning effect of the plunger as it prevents the lingual jaw from traumatizing the soft lingual tissue.



Fig. 8a: The distal abutment is to be endodontically treated after cautious removal of the prosthesis. Orthodontic ligature wire is wrapped around the solder joints and then ligated together to form a purchase for a reverse mallet.



Fig. 8b: A lump of autopolymerizing acrylic resin packed against the tooth to be isolated. The acrylic is held in position while a clamp is applied to the tooth/acrylic complex. This position is maintained until the acrylic has set. The occlusal access is then refined with a carbide bur until the acrylic margins are well clear of the cleaning and shaping routine.

the fewer teeth there are for abutment anchorage, i.e. a broken-down second premolar generally has two potential abutments distal to it, while a severely broken-down second molar is more than likely the last tooth in the quadrant.

This problem is compounded by edentulous areas. However, the clinician is once again reminded that the application of a clamp to the tooth receiving endodontic attention is not necessarily meant to retain the rubber dam sheet, i.e. primary retention. Rather, primary rubber dam retention is provided

by adjunctive retentive aids, which in many cases have to be placed several teeth away from the endodontically-involved tooth. **Figs. 5a & 5b** demonstrate this principle, as the retention provided by the maxillary second premolar is of inconsequential magnitude. The primary rubber dam retention is actually provided by adjunctive retainers. Note that the fixed prosthesis has been removed in order to determine the extent of the carious involvement and the restorability of the remaining tooth structure. Gingival retraction cord provides

radicular exposure beyond the original (now carious) subgingival crown margin. A metal clamp provides distal retention of the dam, while bi-digital pressure exposes the coronal area circumferentially. A sectioned 212 anterior butterfly clamp is selected as its extended bow reaches the clamp/molar combination. The clamp will be "compounded" once its jaws have engaged the subgingival crown margin of the tooth receiving endodontic attention. Note how the jaws of the modified 212 clamp serve merely to restrict the dam in

its circumferential position. Rubber dam retention and stability are provided by the molar clamp and the circumferential ligature retention anterior to the operatory area. The stability of the clamp throughout this procedure bears testimony to the importance of providing rubber dam retention at a site removed from the tooth receiving endodontic attention in those instances where the remaining coronal structure is compromised.

Pin Retained Solutions To Clamp Instability (Fig. 6)

Rubber dam clamps are constructed of metal and, by virtue of their design, possess a measure of elastic recoil. Their efficacy depends on their ability to grip the tooth firmly, thus preventing the retainer from slipping. The structural form of a tooth invariably results in an apical sliding movement as the recoil closure of the clamp engages the cervical proximal corners. This apical movement is a consequence of the convexity and taper of the opposing surfaces in the vertical plane on which the clamp is placed. It follows, therefore, that the preparation taper of a previously-crowned tooth can in many cases preclude adequate clamp retention. In fact, the clamp will tend to spring off the occlusal surface and seriously compromise the isolation effort. The easiest solution in these cases is to use the adjacent teeth as the retentive abutments (Fig. 3).

The isolation of a lone-standing, previously-crowned tooth presents the clinician with a unique challenge. Previous techniques have relied on acid-etch aided composite resin additions, or ledges, in an attempt to gain a false height of contour. Fig. 6 depicts an alternative solution to the isolation of a lone-standing mandibular molar. This case is submitted as a further example of the fact that no tooth should be endodontically treated in the absence of rubber dam isolation.

These "impossible" cases often draw on a clinician's ingenuity. Nevertheless, the isolation skills used are based on basic general dentistry, and the clinician's isolation repertoire is only limited by his

or her inventiveness. The value of asepsis during the endodontic treatment of this mandibular second molar was unattainable, as the existing preparation taper precluded adequate clamp retention. The use of a deep-reaching ("A" style) clamp was considered excessive in view of the potentially injurious post-application consequences, i.e. gingival and cemental damage. Small diameter stainless steel self-threading pins are placed into the buccal and lingual aspects of the residual tooth structure. These are best seated manually with a hand driver to ensure that they do not impede access to the canals. It is occasionally necessary to bend the pins to achieve maximum contact with the jaws of the clamp. A pin bending tool is mandatory to minimize the propagation of fracture lines caused by stresses in the dentin. The pins are cut off level with the dentin at the conclusion of the treatment.

Protection Of Gingival Tissues During Clamp Application In Difficult Endodontic Access Situations (Fig. 7)

Gingival recession often progresses at unequal rates on buccal and lingual alveolar surfaces. The resultant gingival topography is apt to pose a problem in terms of the complexities of clamp application. Using the elastic recoil of a metal rubber dam retainer to retract the gingival tissues beyond the gingival border of the root carious lesion will generally result in a sliding movement, in a downward direction, due to the convexity of the opposing surfaces. This unwanted vertical displacement would be arrested by the gingival tissues, which would permit easy engagement of the jaws of the metal retainer.

In the light of the potential for iatrogenic damage, which is directly related to the measure of force that would be exerted by the jaws of the clamp,⁶ it was decided to approach the isolation of the lesion depicted in Fig. 7 in two phases. Phase one involved preliminary isolation, which allowed for caries excavation and temporization of the lingual defect. Phase two involved definitive isolation

using conventional retainer application. Janus introduced the idea of protecting the gingival tissues by covering the lingual jaw of metal retainers with the rubber plunger from a used anesthetic carpule.⁷ I have found that the best method of ensuring successful stability of the plunger is to first make a pilot hole in the plunger using a diamond bur at high speed. The rubber plunger is then twisted onto the jaw of the retainer and applied in the usual manner. Fig 7 depicts the lingual view, and demonstrates the root caries that had resulted in acute apical periodontitis of a mandibular second premolar. The unequal rates of buccal and lingual recession resulted in a gingival topography that posed a problem with respect to the stability of the lingual jaw of a retainer. A half clamp was fabricated by sectioning the bows of a 212 clamp and further modified by covering the lingual jaw with the rubber plunger from a used anesthetic carpule. The cushioning effect of the plunger prevents the lingual jaw from traumatizing the soft lingual tissue.

Lingual communication with the pulp chamber was inevitable during caries excavation. A gutta percha point was used to temporarily obturate the canal while the lingual pulpal communication was sealed with IRM cement. The bow of the modified retainer has been stabilized with caulking compound during phase one of this two phase isolation procedure. Note the mesial orientation of the bow. This is the last tooth in this quadrant, and as such the bow has had to be directed mesially for compounding purposes. It is this mesial orientation that is sure to compromise the digital access requirements.

The IRM cement lingual filling is trimmed flush with the tooth surface. Bi-digital pressure maintains the rubber dam during removal of the modified clamp and its replacement with a conventional retainer. This completes phase two of the isolation procedure. Phase one has ensured a positive lingual seal, while permitting reversion to traditional retention with a distally orientated bow.





Autopolymerizing Acrylic Resin Aided Retention (Figs. 8a & 8b)

This is a quick and effective method of secondary retention. Although it is demonstrated in a case where many isolation options were possible, it is a useful technique for the clinician to add to his isolation repertoire. While its aseptic capacity is often limited, it is nevertheless guaranteed to provide adequate patient protection when the taper of a tooth, which has been prepared for full coverage, precludes the use of all other atraumatic retaining efforts.

The distal abutment of this maxillary three-unit fixed partial denture (Fig. 8), which was temporarily cemented less than six weeks previously, has developed irreversible pulpitis and is to be endodontically treated after cautious removal of the prosthesis. Split rubber dam isolation provides mandatory protection of the patient during removal of the prosthesis. Primary rubber dam retention is established with adjunctive retentive aids when possible. Orthodontic ligature wire is wrapped around the solder joints and then ligated together to form a purchase for a reverse mallet. Once the abutments are exposed, the surrounding gingival tissue is protected with an emollient and a lump of autopolymerizing acrylic resin, which is just about to enter the dough stage of polymerization, is packed against the tooth to be isolated. The acrylic is held in position while a clamp is applied to the tooth/acrylic complex. This position is maintained until the acrylic has set. A flat-bladed instrument is then used to carve out the occlusal access. The occlusal access is then refined with a carbide bur until the acrylic margins are well clear of the cleaning and shaping routine.

Conclusion

There are many situations where the endodontic isolation of the working field is exceptionally difficult, and tends to remain difficult, even for those practitioners who are familiar with all the variations of rubber dam application.

The rubber dam methods described here are not intended as a substitute when traditional rubber dam isolation methods are anticipated as being adequate. These techniques are primarily offered as a means to encourage the use of mandatory rubber dam isolation for each and every endodontic procedure. Alternative techniques and practical hints are aimed principally at those dentists who have rejected the rubber dam in ignorance of its ease of application and versatility. ■

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Dr. Liebenberg recently emigrated to Canada from South Africa, and is currently establishing a general practice in Vancouver.

References

1. Cragg, T.K. The use of rubber dam in endodontics. *J Can Dent Assoc* 38:376, 1972.
2. Reuter, J.E. The isolation of teeth and the protection of the patient during endodontic treatment. *Int Endod J* 16:173-181, 1983.
3. Liebenberg, W.H. Extending the use of rubber dam isolation: alternative procedures. Part 1. *Quintessence Int* 23:657-667, Sept 1992.
4. Reid, J.S. Callis, P.D. and Patterson, C.J.W. *Rubber Dam in Clinical Practice*. Chicago, Quintessence Publishing Co. Ltd., 1991.
5. Ireland, L. Rubber dam: it's advantages and application. *Texas Dental J*, March, 80:6, 1962.
6. Jeffrey, I.W.M. and Wolford, M.J. An investigation of possible iatrogenic damage caused by metal rubberdam clamps. *Int Endo J* 22:85-91, 1989.
7. Janus, C.E. The rubber dam reviewed. *The Compendium of Cont Educ in Dent* 5(2):155-161, 1984.
8. Elderton, R.J. A modern approach to the rubber dam. Parts I, II, III. *Dental Practice and Dental Records*, 21,3;21,10;21,17.



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Down's Syndrome and Alzheimer's Disease

Michael J. Sigal, DDS, M.Sc., Dip. Ped., MRCD(C)

Norman Levine, B.Sc., DDS, M.Sc.D., Dip. Ped., FRCD(C)

ABSTRACT

Individuals with Down's syndrome (DS) who live to be 40 years of age will demonstrate neuropathological changes that are consistent with Alzheimer's disease (AD). Due to modern medical intervention, we are now observing an aging DS population. Middle-aged Down's syndrome adults are actually considered to be "very old," and it is not uncommon to observe a progressive loss of cognitive function and a decline in the ability to perform daily tasks consistent with that seen in Alzheimer's disease. At this stage, the DS individual will not be able to perform daily preventive dental care and may be unable to cooperate for professional dental care. Clinicians who care for DS adults must be aware of this problem when preparing their dental treatment plans, which must emphasize preventive care prior to the onset of dementia and the maintenance of that program during their patients' cognitive decline. In the latter stages of AD, it may be necessary to extract all the remaining teeth due to the inability of the individual or care giver to provide adequate oral hygiene to prevent dental caries or periodontal disease.

SOMMAIRE

Lorsqu'elles atteignent la quarantaine, les personnes affligées du

syndrome de Down éprouvent des changements d'ordre neuropathologique associés à la maladie d'Alzheimer. Grâce à la médecine moderne, nous observons maintenant des personnes avec le syndrome de Down en train de vieillir. Bien qu'elles soient seulement autour de la quarantaine, celles-ci passent pour être «très vieilles», et il n'est pas rare qu'on observe chez elles une perte progressive des facultés cognitives et une capacité de moins en moins grande de faire des tâches quotidiennes, ce qui est tout à fait caractéristique de la maladie d'Alzheimer. Rendues à ce point, ces personnes ne sont plus capables de s'occuper de leur hygiène dentaire et, parfois, de faire ce que leur recommandent les professionnels dentaires. Les cliniciens qui les traitent doivent être conscients de ce problème lorsqu'ils préparent des plans de traitement à leur intention; ils doivent leur souligner l'importance des soins de prévention avant le début de la maladie d'Alzheimer et s'assurer qu'elles continueront de recevoir des soins d'hygiène lorsque leurs facultés cognitives s'affaibliront. Et quand la maladie en sera aux derniers stades de son évolution, il pourra être nécessaire parfois d'extraire les dents qui restent parce que le malade — ou la personne qui s'occupe de lui — n'est plus du tout capable de veiller convenablement à son hygiène afin de prévenir les caries ou les maladies périodontales.

Down's syndrome (DS) occurs in approximately one out of every 1,000 live births, and accounts for 17 per cent of the mentally-challenged population.^{1,2} Due primarily to early medical intervention, the life expectancy for individuals with Down's syndrome has been vastly improved, such that 70 per cent of Down's individuals can be expected to live beyond 50 years of age.^{3,4} This has resulted in an elderly population of DS individuals, not previously seen in large numbers. A DS individual is considered to be "very old" at 50 years of age, and may in fact have many signs and/or symptoms of precocious aging or dementia.

An association between premature senile dementia and DS has been recognized for the past 100 years.⁵ Autopsy has demonstrated the presence of senile plaques (SP) and neurofibrillary tangles (NFT) in subjects with DS. These specific pathological findings are characteristic of Alzheimer's disease (AD).^{6,7} Most patients with DS who live past 40 years of age will demonstrate cerebral neuropathologic changes consistent with those seen in AD.^{7,8} These include: senile plaques, neurofibrillary tangles in the cerebral cortex and hippocampus, granulovacuolar degeneration in the hippocampus, decreased activity of the cholinergic enzymes such as choline acetyltransferase and acetylcholinesterase, and reductions in brain dopamine, serotonin, and norepinephrine levels.⁹



Clinical diagnosis for early onset Alzheimer's dementia is based on the finding of a progressive dementia, characterized by the loss of ability to retain information recently presented. It is speculated that all individuals with DS will develop Alzheimer's dementia if they live long enough.⁹ It is not understood why SP and NFT should develop 20-30 years earlier in individuals with DS as compared to the general population, and why this leads to a clinical expression of dementia three times more frequently than in non-affected subjects.⁸

Three phases for clinical deterioration have been recognized in the DS individual who is developing AD. The initial phase of AD is memory impairment, temporal disorientation and, in the higher functioning DS individual, reduced verbal output. In more mentally retarded patients, the first indications of dementia are apathy, inattention and decreased social interactions. Individuals frequently become lost in or around their residence. The second phase is characterized by a loss of self-help skills, such as dressing, toileting, and feeding. At this point, the gait is usually slow and shuffled, and the performance of tasks continually decreases. Seizure disorders may appear. In the final phase, patients will be non-ambulatory, bedridden, and often assume flexed postures. Sphincteric incontinence is present as well as pathological reflexes such as snout, suck, palmer grasp, palmomental and glabellar reflexes. Aspiration pneumonia and infection commonly precede death.¹⁰ In the latter stages, the prevalence of seizure disorder, which for DS is usually quite low, can be as high as 85 percent. This increased seizure activity in the DS individual with AD is an indication of a severe disturbance in the CNS.^{10,11}

There appears to be a latent period of two to three decades between the neuropathological changes seen at autopsy that are consistent with AD and the clinical expression of AD in individuals with Down's syndrome.¹⁰ In the general population, the clinical expression of Alzheimer's type dementia (DAT) progresses through a continuum of memory loss, language distur-

bances, visuospatial disorientation, and motor apraxia. Later, deterioration in social skills, motivation, attention and gait occurs. Finally, pathological reflexes and sphincteric disturbances emerge and the patient becomes mute and bedridden.¹² With Down's syndrome, the early phases of DAT are masked by mental retardation and poor language skills.

Loss of memory skills will only be noted in those individuals with mild to moderate mental retardation (it cannot be assessed in the severe or profoundly mentally retarded). In the majority of cases, the first symptom is a change in personality, such as irritability or, in the severe or profoundly mentally retarded Down's group, emotional mood swings. It may be noticed that there is a need for more assistance with all activities of daily living (ADL), such as toileting, dressing and eating.^{10,13}

The average age of clinical onset for Alzheimer's type dementia in individuals with DS is 51 years.^{10,14} However, neuropathological changes that are consistent with Alzheimer's dementia are seen in almost all DS individuals by the time they reach 40 years of age. Therefore, there appears to be a significant incubation period before the actual clinical symptoms of dementia become apparent. This incubation period could be as long as 20 to 30 years.¹⁵ It is hypothesized that the presence of trisomy 21 in DS may be a risk factor for the development of Alzheimer's dementia.¹⁶

It has also been noted that persons with Down's syndrome have an increased incidence of mortality from infectious diseases and malignancies, and an increased incidence of autoimmune disorders.

These observations support the belief that the DS individual may have an underlying immunological abnormality.^{17,18} It is generally accepted that these individuals have a dysgammaglobulinemia, a decreased absolute number and proportion of T cells, and an increased incidence of auto-antibodies to thyroid. Other than T cell function, the immunologic deficits in DS appear to be similar to those seen during senescence in normal individuals. However, they are occurring 20

years earlier than they do in the normal population.¹⁹

A considerable amount of information is available on oral manifestations and their management in both Down's syndrome and Alzheimer's disease.²⁰ However, there is a paucity of documented information concerning the oral condition in the Down's syndrome individual who develops Alzheimer's disease while chronologically young.

With regards to Down's syndrome, individuals have characteristic facial features, which are: marked epicanthic folds (on either side of the nose), oblique (oriental) slant to the eyes, flat nasal bridge, midface hypoplasia, small oral cavity, tongue protrusion and hypotonic lips. Additional features include: small or absent frontal and paranasal sinuses, narrow/obstructed nasal airway, small chin, ear deformities with hearing impairment, and ocular deformities with visual impairment. Many will also have generalized poor muscle tone, joint hypermobility, and a small physical stature.²¹⁻²³

The midface hypoplasia, which is characterized by a small maxilla, sinus cavities and flat nasal region, creates an inadequate nasal airway. Therefore, DS individuals are prone to mouth breathing and assume an oral posture in which their mouths are held open with their tongues protruding forward in order to maintain an adequate airway. This pattern of breathing is associated with a high incidence of upper respiratory infections as compared to mentally retarded individuals with normal airway patterns. Although this condition can be surgically corrected by widening and advancing the maxilla, it is not often done. Some individuals with DS undergo facial surgery to alter the slant of their eyes, or to augment the nose or cheeks, in an attempt to decrease the characteristic DS appearance. This may be done during childhood or once facial growth is completed.²⁴⁻²⁸

Fissured or scrotal tongue is quite common in Down's syndrome. The fissures can retain oral bacteria and food debris, which can result in halitosis. Therefore, an oral hygiene program must include brushing of the dorsal surface of the tongue.

A narrow palate and hypoplastic maxilla that is superimposed on a normal sized mandible will result in a Class III malocclusion. In addition, DS individuals have a high incidence of posterior cross bite and anterior open bite. Provided the patient's behavior is acceptable, these conditions can be corrected or improved with orthodontic therapy. Finally, some DS individuals have a true macroglossia, which can compound the airway, speech and mastication difficulties.²⁶⁻²⁸ The macroglossia can be managed by a partial glossectomy. However, this usually results in an abnormally shaped tongue that is relatively fibrotic. This surgical result may be an improvement from an esthetic perspective, but may in fact impair speech and/or swallowing.

Dentally, altered or delayed tooth eruption, multiple congenitally missing teeth and, in many instances, small teeth are frequently observed in DS.²³ The dental caries rate appears to be lower in the DS individual, even in the presence of poor oral hygiene, as compared to the normal population. It is not certain if this is due to a more controlled diet, tooth morphology, or a specific difference in the saliva of these individuals that provides greater caries protection. However, the DS individual is extremely prone to develop aggressive periodontal disease. This results in loss of gingival attachment and subsequent loss of supporting alveolar bone, and eventually tooth loss. The exact cause of this phenomenon is not known. However, it is felt that it could be due to a T cell deficiency or a functional defect in the polymorphonuclear leukocytes.²⁹⁻³³

The most important aspect of dental care for the DS individual is the establishment of a comprehensive, preventive dental program. This would include a daily oral hygiene routine performed at least twice per day, which should be supervised. It would consist of brushing, flossing and perhaps rinsing with an anti-microbial rinse, such as 0.1 to 0.2 per cent chlorhexidine. If the individual cannot perform adequate oral hygiene, then a care giver will have to do this using hand-over-hand technique, or perhaps using an aid such

as an electric toothbrush. Brushing can also be done with the chlorhexidine solution, at least once per day, for the individual who cannot rinse and expectorate. The preventive program would also include routine professional visits for cleaning and fluoride therapy. Only with the prior establishment of a sound oral hygiene program can we prevent the insidious onset of periodontal disease and subsequent tooth loss. In most circumstances, DS patients have a pleasant, docile personality that makes the delivery of dental care relatively easy. However, if the individual is aggressive or stubborn, then other methods of behavior management may have to be employed in order to deliver the required dental care. This may include a behavior modification program, physical restraints, sedation or an annual general anesthetic session. Prior to delivering care with any of these methods, it is imperative that risks and benefits are explained and that consent is obtained.

Several significant medical conditions are frequently seen in association with DS. These individuals have a high incidence of congenital cardiac defects and of later onset cardiac problems such as mitral valve prolapse.³⁴⁻³⁶ Hypothyroidism is quite common in DS.³⁷ There is an observed immune system dysfunction that is thought to be linked both to the high rate of adult-onset leukemia, and advanced periodontal disease.^{31,38-40} Finally, there is the demonstrated link between DS and Alzheimer's dementia.

With the onset of Alzheimer's dementia in DS at 40 to 50 years of age, a decrease in the ability to perform oral hygiene may be observed due to the combined effect of memory loss, confusion and loss of motor skills. As a result, food material and bacterial plaque will accumulate, causing an advanced rate of both periodontal disease and dental caries. The teeth will deteriorate rapidly, which may result in the development of an oral infection, dental abscess, oral pain and halitosis. This oral discomfort may affect mastication and the general level of nutrition, which will have an effect on the general state of health. As the oral system deteriorates, this can

only have a negative impact on the quality of the individual's life.

As soon as the early stages of Alzheimer's disease are recognized in the DS individual, it is imperative that all dental disease in the form of caries or periodontal disease be treated by restoration, extraction, and the establishment of a comprehensive preventive program. This must be done while it is still possible to perform daily oral hygiene and routine dental care in an ambulatory clinic setting. At this stage the patient may respond to visual aids and hand-over-hand supervision for the delivery of preventive care. As the Alzheimer's dementia progresses, it may be necessary to sedate the individual or administer a general anesthetic in order to perform the dental care.

With the progression of Alzheimer's disease, there will also be a loss of oral motor control to the degree that the individual may no longer be able to wear partial or full dentures. The removable appliances could interfere with the maintenance of the individual's airway. In addition, at this stage patients will no longer be able to masticate food properly and should be placed on a soft or pureed diet. In the latter stages of the disease, daily oral hygiene is often no longer possible. Dental care will be either palliative in nature or definitive, in the sense that all remaining teeth would be extracted under general anesthesia.

Poor oral hygiene will result in the accumulation of oral bacteria around the remaining teeth. The gingiva will become inflamed and start to break down in the crevicular region, thereby allowing oral bacteria to enter the systemic circulation directly and give rise to chronic bacteremia. In turn, this bacteremia can result in fevers of unknown origin or infections at distant sites, such as prosthetic joints or cardiac valvular or wall anomalies. At this point, poor oral health can have a negative impact on the general health of the DS patient with AD.

Finally, with impaired oral-pharyngeal motor function, the Down's-Alzheimer's individual may be more prone to experiencing choking episodes and possible aspiration of saliva. If the saliva has a greater concentration of gram-negative bacteria

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References 1. Stookey GK et al. *Caries Research*, June 1993.

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2. Procter & Gamble, data on file based on mathematical model In: Kingman A. *Caries Research* 1993; in press.

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as a result of poor oral hygiene and an accumulation of undisturbed dental plaque, there will be a greater risk of developing aspiration pneumonia, which could be life threatening.^{41,42}

In summary, the individual with Down's syndrome has many dental problems, all of which become much more serious by the early onset of Alzheimer's dementia. The only therapeutic management that is recognized as beneficial for the young patient is the establishment and maintenance of a comprehensive preventive program, and to continue this program throughout the development and progression of Alzheimer's dementia. ■

Dr. Sigal is an associate professor in pediatric dentistry at the University of Toronto, the chief of dentistry at Queen Elizabeth Hospital, Toronto, and the director of dentistry for the disabled at Mt. Sinai Hospital, Toronto.

Dr. Levine is a professor and the head of pediatric dentistry at the University of Toronto.

Reprint requests to: **Dr. M. Sigal**, Department of Pediatric Dentistry, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6.

References

- Adams, M.M., Erickson, J.D., Layde, P.M. et al. Down's syndrome. Recent trends in the United States. *JAMA* 246:758-760, 1981.
- Heller, J.H. Human chromosome abnormalities as related to physical and mental dysfunction. *J Hered* 60:239-252, 1969.
- Dupont, A., Vaeth, M. and Videbech, P. Mortality and life expectancy of Down syndrome in Denmark. *J Ment Defic Res* 30:111-120, 1986.
- Baird, P.A. and Sadovnick, A.D. Life expectancy in Down's syndrome. *J Paediatr* 110:849-854, 1987.
- Fraser, J. and Mitchell, A. Kalmuc idiocy: report of a case with autopsy with notes on 62 cases. *J Met Sci* 22:161-169, 1876.
- Mann, D.M.A., Yates, P.O., Marcyniuk, B. et al. The topography of plaques and tangles in Down's syndrome patients of different ages. *Neuropathol Appl Neurobiol* 12:447-457, 1986.
- Mann, D.M.A. The pathological association between Down syndrome and Alzheimer disease. *Mech Age Develop* 43:99-136, 1988.
- Wisniewski, K.E., Wisniewski, H.M. and Wen, G.Y. Occurrence of neuropathological changes and dementia of Alzheimer's disease in Down's syndrome. *Ann Neurol* 17:278-282, 1985.
- Culter, N.R., Heston, L.L., Davies, P. et al. Alzheimer's disease and Down's syndrome: new insights. *Ann Int Med* 103:566-578, 1985.
- Lai, F. and Williams, R.S. A prospective study of Alzheimer's disease in Down syndrome. *Arch Neurol* 46:849-853, 1989.
- Veall, R.M. The prevalence of epilepsy among mongols related to age. *J Ment Defic Res* 18:99-106, 1974.
- Katzman, R. Alzheimer's disease. *N Eng J Med* 314:964-973, 1986.
- Rae-Grant, A.D., Barbour, P.J., Sirotta, P. et al. Alzheimer's disease in Down's syndrome with SPECT. *Clin Nuc Med* 16:509-510, 1991.
- Wisniewski, K.E., Dalton, A.J., Crapper-McLachlan, D.R. et al. Alzheimer's disease in Down's syndrome: clinicopathologic studies. *Neurology* 35:957-961, 1985.
- Ropper, A.H. and Williams, R.S. Relationship between plaques, tangles, and dementia in Down's syndrome. *Neurology* 30:639-644, 1980.
- Dalton, A.J. and Crapper-McLachlan, D.R. Clinical expression of Alzheimer's disease in Down's syndrome. *Psych Clin N Amer* 9:659-670, 1986.
- Thase, M.E. Longevity and mortality in Down's syndrome. *J Ment Def Res* 26:177-192, 1982.
- Walford, R.L. Immunological studies of Down's syndrome and Alzheimer's disease. *Ann N Y Acad Sci* 396:95-106, 1982.
- Fishman, M.A. Will the study of Down syndrome solve the riddle of Alzheimer's disease? *J Pediatr* 108:627-629, 1986.
- Ship, J.A. Oral health of patients with Alzheimer's disease. *JADA* 123:53-58, 1992.
- O'Riordan, M.W. and Walker, G.F. Dimensional and proportional characteristics of the face in Down's syndrome. *J Dent Handicap* 4:6-9, 1978.
- Fischer-Brandier, H., Schmid, R.G. and Fischer-Brandier, E. Craniofacial development in patients with Down's syndrome from birth to 14 years of age. *Europ J Orthod* 8:35-42, 1986.
- Shafer, W.G., Hine, M.K. and Levy, B.M. *A Textbook of Oral Pathology*, ed. 3, Philadelphia, Saunders, 1974.
- Ticher, S., Sela, M. and Lewin-Epstein, Y. The use of polydimethylsiloxane subdermal implants for correcting facial deformities in Down's syndrome. *J Prosthet Dent* 52:264, 1984.
- Peled, I.J., Wexler, M.R., Ticher, S. et al. Mandibular resorption from silicone chin implants in children. *J Oral Maxillofac Surg* 44:346-348, 1986.
- Olbrisch, R.R. Plastic surgical management of children with Down's syndrome: indications and results. *Brit J Plast Surg* 35:195-200, 1982.
- Wexler, M.R., Peled, I.J., Rand, Y. et al. Rehabilitation of the face in patients with Down's syndrome. *Plast Reconstr Surg* 77:383-393, 1986.
- Becking, A.G. and Tuinzing, D.B. Orthognathic surgery for mentally retarded patients. *Oral Surg* 72:162-164, 1991.
- Ulseth, J.O., Hestnes, A., Stovner, L.J. et al. Dental caries and periodontitis in persons with Down syndrome. *Spec Care Dent* 11:71-73, 1991.
- MacLaurin, E.T., Shaw, L. and Foster, T.D. Dental caries and periodontal disease in children with Down's syndrome and other mentally handicapping conditions. *J Paed Dent* 1:15-19, 1985.
- Reuland-Bosma, W., van den Barselaar, M.T., van de Gevel, J.S. et al. Non-specific and specific immune responses in a child with Down's syndrome and her sibling. A case report. *J Periodont* 59:249-253, 1988.
- Barnett, M.L., Press, K.P., Friedman, D. et al. The prevalence of periodontitis and dental caries in a Down's syndrome population. *J Periodont* 57:288-293, 1986.
- Shapira, J., Stabholz, A., Schurr, D. et al. Caries levels, Streptococcus mutans counts, salivary pH, and periodontal treatment needs of adult Down syndrome patients. *Spec Care Dent* 11:248-251, 1991.
- Barnett, M.L., Friedman, D. and Kastner, T. The prevalence of mitral valve prolapse in patients with Down's syndrome: Implications for dental management. *Oral Surg* 66:445-447, 1988.
- Tandon, R. and Edwards, J.E. Cardiac malformations associated with Down's syndrome. *Circulation* 47:1349-1355, 1973.
- Goldhaber, S.Z., Rubin, I.L., Brown, W. et al. Valvular heart disease (aortic regurgitation and mitral valve prolapse) among institutionalized adults with Down's syndrome. *Am J Cardiol* 57:278-281, 1986.
- Reuland-Bosma, W. and Dibbets, J.M.H. Mandibular and dental development subsequent to thyroid therapy in a boy with Down syndrome: report of a case. *J Dent Child* 58:64-68, 1991.
- Barkin, R.M., Weston, W.L., Humber, J.R. et al. Phagocytic function in Down's syndrome. *J Ment Defic Res* 24:243-249, 1980.
- Kahn, A.J., Evans, H.E. and Glass, L. Defective neutrophil chemotaxis in patients with Down syndrome. *J Pediatr* 87:87-92, 1975.
- Rosner, F. and Kozinn, P.J. Leucocyte function in Down's syndrome. *Lancet* 2:283-386, 1972.
- Limeback, H. The relationship between oral health and systemic infections among elderly residents of chronic care facilities: a review. *Gerodont* 7:131-137, 1988.
- Loeshe, W. Aspiration Pneumonia. In: *Periodontal Care for Older Adults*. Ellen, R.P. (ed), Toronto, Canadian Scholars' Press, 1992, pp 236-242.





Oral Health and the Quality Of Life Among Older Adults: The Oral Health Impact Profile

David Locker, BDS, PhD

Toronto

Gary Slade, BDS, DDPH

Adelaide, Australia

ABSTRACT

A number of studies are beginning to show that oral disorders can have a significant impact on the functional, social and psychological well-being of older adults. The Oral Health Impact Profile (OHIP) was developed to collect information on the nature and extent of this impact, and to facilitate the use of such data in oral health surveys, the evaluation of dental procedures and the clinical evaluation of patients. This paper describes OHIP and the results of two studies undertaken in Ontario to assess its measurement properties and to provide preliminary data on the way in which oral conditions compromise the quality of life of older adults. The measure proved to be reliable and valid, while data collected using this measure indicated that oral conditions have a negative impact on the daily lives of substantial proportions of older people. This impact was particularly marked among both edentulous and dentulous individuals who did not make regular visits for dental care.

SOMMAIRE

Certaines études commencent à démontrer que les désordres bucco-dentaires peuvent avoir de grandes conséquences pour la capacité fonctionnelle, la vie sociale

et l'équilibre psychologique des personnes âgées. Justement, le «Oral Health Impact Profile» (OHIP) a été élaboré afin de pouvoir recueillir des données touchant la nature et l'importance de ces conséquences et d'en faciliter l'utilisation dans les enquêtes sur la santé bucco-dentaire, l'évaluation des procédures dentaires et l'évaluation clinique des patients. Dans cet article, on explique ce qu'est le OHIP et on donne les résultats de deux études faites en Ontario afin d'en déterminer les mérites et d'obtenir des données préliminaires sur la manière dont les désordres bucco-dentaires peuvent compromettre la qualité de la vie des personnes âgées. Le OHIP s'est révélé un bon outil auquel on peut se fier, alors que les données recueillies grâce à lui ont démontré que les désordres bucco-dentaires entraînent des conséquences négatives dans le quotidien de bon nombre de personnes âgées. Ces conséquences sont particulièrement marquées pour les édentés et aussi pour les dentés qui ne voient par régulièrement le dentiste.

Introduction

It has been predicted that the aging of the Canadian population, the increasing tendency for older people to retain their teeth, and changes in the attitudes of older adults toward oral health

will lead to changes in the patterns of need and demand for dental care by the elderly.¹⁻³ As a consequence, there is currently considerable interest in the oral health status and treatment needs of this section of the population.

There is also an interest in including quality of life issues in assessments of the oral health status of elderly populations. While it is quite common for our medical colleagues to measure the extent to which chronic conditions compromise functional, social and psychological well-being, this is relatively rare in dentistry. Dental health surveys, for example, use clinical or disease-based measures of oral health and generally pay little attention to the disabling and handicapping consequences of oral disease.

Based on the few studies that have collected such information, it is clear that oral disorders can have a significant impact on important aspects of everyday life, and that this impact is particularly marked among the elderly. For example, Locker⁴ found that 37.8 per cent of the 65- to 74-year-old population and 45.8 per cent of the 75-year-old and over population had some limitation in their ability to chew. In addition, 37.7 per cent and 47.1 per cent of individuals in these two groups, respectively, reported problems with eating and communication, which resulted in re-

sponses such as avoiding eating with others or being embarrassed by the appearance of their teeth or mouth.

In order to assess the nature of oral disorders and the extent to which they affect the quality of life of older adults, a number of measures have been developed. These scales are now being evaluated with respect to their use in oral health surveys and the clinical assessment of patients.^{5,6} While the issues they address are likely to be taken into account by dentists in determining treatment needs, the scales provide a standardized way of obtaining information and quantifying the effects of oral disorders on patients' functional, social and psychological well-being.

Consequently, these scales are of potential interest to dentists insofar as they document their patients' subjectively-perceived health problems, which motivate them to seek dental care, have a bearing on the patients' own views of their dental health care needs, and influence patient satisfaction with respect to the treatment received. They are of potential interest to dental services planners, since they facilitate decisions concerning the allocation of health care resources and can be used in the evaluation of dental health care programs.⁷

This paper describes a newly-developed measure, the Oral Health Impact Profile (OHIP),⁸ which has recently been tested in studies of the oral health of older adults in three locations: South Australia, North Carolina and Ontario. The aim of these studies was to assess the reliability and validity of OHIP and to provide preliminary data on the impact of oral conditions on the quality of life of elderly populations. Only data from the Ontario study are presented here. The results of the other studies will be reported by their respective investigators prior to a comparison of results from all three sites.

The Oral Health Impact Profile

OHIP was developed by investigators in South Australia⁸ using methods similar to those employed

in the construction of the Sickness Impact Profile,⁹ a comparable measure widely used in general health surveys, assessments of individuals with chronic disabling conditions and the evaluation of health care.

Initially, detailed interviews were undertaken with 64 dental patients with a variety of oral disorders, and information was obtained on how these disorders affected daily life. The interviews gave rise to 535 statements concerning the functional, social and psychological impact of oral conditions. An extensive editing and sorting process, involving a content analysis of each statement and the grouping of statements into common themes, was used to reduce the number of items to 49.

The statements were written as questions, and linked the event referred to in the statement to oral health problems. For example: "How often...have you had any difficulty chewing any foods because of problems with your teeth, mouth or dentures?" The reference period used was the year prior to the completion of the instrument, and the response format was a five-point scale with the following categories: 1) very often; 2) fairly often; 3) occasionally; 4) hardly ever; and 5) never.

These statements were grouped into seven sub-scales using a conceptual framework derived from the World Health Organization (WHO) International Classification of Impairments, Disabilities and Handicaps.¹⁰ The sub-scales were: functional limitation, physical pain, psychological discomfort, physical disability, psychological disability, social disability and handicap. Given the broad scope of the measure and the nature of the problems addressed, OHIP is akin to an index of the quality of life.

Overall OHIP and sub-scale scores can be obtained in a number of ways: by counting the number of statements with a positive response; by summing the responses across statements, using the value for each response category; or by using a series of weights developed by the investigators, which measure the relative severity of each

OHIP statement. A more detailed account of the measure's construction can be found in Slade and Spencer.⁸

Method

Subjects for this study consisted of individuals who took part in the baseline phase of the Ontario Study of the Oral Health of Older Adults. This was a study of the oral health and treatment needs of persons aged 50 years and over living independently in two metropolitan and two non-metropolitan communities in Ontario. Baseline data were collected by personal interviews and clinical examinations. Subjects in the metropolitan communities (n=559) were interviewed and examined in 1989, while subjects living in the non-metropolitan communities (n=348) were interviewed and examined in 1990. The results of this study have been reported previously.¹¹

OHIP became available just prior to the start of data collection in the non-metropolitan areas. Subjects from these areas who completed the interview and examination were given a copy of OHIP and asked to return the completed questionnaire by mail. Although previous work in Australia had shown that the measure had good measurement properties,⁸ these preliminary data were used to assess the reliability and validity of OHIP when used on a Canadian population.

The internal reliability of the seven sub-scales contained in the measure was assessed using a statistic known as Cronbach's alpha. This gives an indication of the extent to which subjects who respond positively to one item also respond positively to other items. In this regard, it measures the consistency of subjects' responses to items in a given OHIP sub-scale. Scores of 0.60 or more indicate good to excellent reliability. Validity was assessed by examining the association between scores on OHIP and scores on a number of other subjective oral health indicators constructed from responses to questions asked during the personal interview component of the study. These subjective indicators were: 1) self-perceived need for dental



treatment (yes, no); 2) self-rating of oral health status (excellent, very good, good, fair, poor); 3) an index of chewing capacity based on the ability to chew six foods varying in consistency and texture; 4) inventories of oral pain and other oral symptoms experienced in the four weeks prior to the interview; 5) a seven-item index of problems with respect to eating and communication; and 6) satisfaction with oral health status. These indicators have been described in detail elsewhere.⁴ For these assessments of validity, overall OHIP scores were calculated by a count of the number of items to which a subject responded "very often" or "fairly often."

A second phase of data collection was undertaken one year after the baseline study. All 907 subjects who took part in the baseline interviews and examinations were mailed a copy of OHIP and asked to return the completed questionnaire by mail. These data were used to describe the impact of oral conditions on the quality of life of older adults and to explore variations in the nature and extent of this impact by age, gender, dental status and use of dental services. Although data on dental status were collected one year prior to the collection of the OHIP data, we have assumed that few, if any, of the edentulous subjects would have become edentulous during the intervening period. This assumption is supported by studies from the U.S. that have found the incidence of edentulism to be low, even among the very old.¹² Similarly, we have assumed that the subjects' general pattern of use of dental services (regularly for a dental examination, irregularly, only when having pain or other trouble) remained unchanged over this period.

Results

Completed OHIPs were returned by 312 (89.7 percent) of the 348 non-metropolitan subjects interviewed and examined at baseline. Values of Cronbach's alpha for the seven sub-scales ranged between 0.80 and 0.90, indicating excellent reliability. Correlation

TABLE I
Response to OHIP Items

How often (have you) (has) (have you had) during the last year, because of problems with your teeth mouth or dentures?			
	Very/ fairly often	Occasionally	Hardly ever/ Never
	%	%	%
Functional Limitation			
Difficulty chewing any foods	10.5	22.0	67.5
Trouble pronouncing words	2.8	9.6	87.6
Noticed a tooth which doesn't look right	7.3	15.2	77.5
Felt that your appearance has been affected	10.3	15.6	74.1
Felt that your breath has been stale	5.6	24.9	69.7
Felt that your sense of taste has worsened	5.1	8.1	86.8
Had food catching in your teeth or dentures	36.4	45.5	18.1
Felt that your digestion has worsened	4.8	8.7	86.5
Felt that your dentures have not been fitting properly	11.4	13.6	75.0
Pain			
Had painful aching in your mouth	4.9	21.6	73.5
Had a sore jaw	3.5	15.9	80.6
Had headaches	1.6	5.7	92.7
Had sensitive teeth with hot or cold food or drinks	8.8	33.0	58.2
Had toothache	1.2	15.3	83.5
Had painful gums	6.0	28.5	65.5
Found it uncomfortable to eat any foods	10.6	23.9	65.5
Had sore spots in your mouth	7.9	35.3	56.8
Had uncomfortable dentures	9.3	12.5	78.2
Psychological discomfort			
Been worried by dental problems	10.8	21.8	67.4
Been self-conscious	10.7	14.1	75.2
Been miserable	6.1	14.2	79.7
Felt uncomfortable about your appearance	7.8	15.1	77.1
Felt tense	4.8	13.0	82.2
Physical Disability			
Speech been unclear	2.5	10.4	87.1
People misunderstood some of your words	2.5	7.6	89.9
Felt there has been less flavor in your food	4.1	8.5	87.4
Been unable to brush your teeth properly	3.3	7.5	89.1
Had to avoid eating some foods	8.6	18.2	73.2
Had an unsatisfactory diet	3.3	4.8	91.9
Been unable to eat with your dentures	4.4	5.7	89.9
Avoided smiling	5.1	8.3	86.6
Had to interrupt meals	3.4	11.0	85.6

TABLE I (Cont'd)**Response To OHIP Items**

How often (have you) (has) (have you had) during the last year, because of problems with your teeth mouth or dentures?			
	Very/ fairly often	Occasionally	Hardly ever/ Never
	%	%	%
Psychological Disability			
Your sleep been interrupted	1.2	5.3	93.5
Been upset	4.9	13.7	81.4
Found it difficult to relax	2.8	8.5	88.7
Felt depressed	4.1	8.3	87.6
Your concentration been affected	1.6	5.9	92.5
Been embarrassed	4.3	11.9	83.8
Social Disability			
Avoided going out	1.0	3.3	95.7
Been less tolerant of your spouse or family	0.7	3.6	95.7
Had trouble getting on with other people	0.4	2.1	97.5
Been a bit irritable with other people	0.7	4.9	94.4
Had difficulty doing your usual jobs	0.7	2.8	96.5
Handicap			
Felt that your general health has worsened	2.2	3.0	94.8
Suffered any financial loss	6.4	11.5	82.1
Been unable to enjoy other peoples' company	1.9	3.5	94.6
Felt that life in general was less satisfying	3.7	8.9	87.4
Been totally unable to function	0.4	1.5	98.1
Been unable to work to your full capacity	0.7	2.8	96.5

coefficients between scores on OHIP and the subjective indicators of oral health derived from the personal interview were as follows: Scores on the index of chewing capacity, 0.47 ($p < 0.001$); the number of oral pain symptoms in the previous four weeks, 0.41 ($p < 0.0001$); the number of other oral symptoms in the previous four weeks, 0.34 ($p < 0.001$); scores on the seven-item index of problems in eating and communication, 0.68 ($p < 0.001$); scores on the three-item index of satisfaction with oral health status, 0.48 ($p < 0.001$). Subjects who perceived a need for dental treatment had mean OHIP scores of 4.5 ($SD = 7.9$) while those who did not perceive a need for treatment had mean scores of 2.5 ($SD = 5.6$) (t -test: $p < 0.01$). Similarly, there was a significant association between self-rating of oral health and scores on

OHIP. Those rating their oral health as excellent had a mean score of 0.7 ($SD = 2.3$), while those rating their oral health as poor had a mean score of 6.6 ($SD = 7.9$) ($p < 0.0001$).

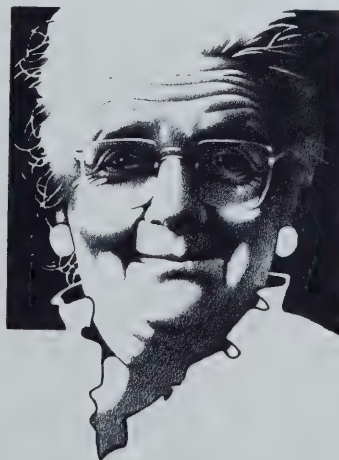
These results indicate that, as expected, those with higher OHIP scores were more likely to have problems in chewing, had more pain and other oral symptoms, were more likely to report problems with eating and communication, and were less satisfied with their oral health. They also were more likely to perceive a need for dental treatment and more likely to believe that their oral health was poor. These associations indicate that OHIP was of acceptable validity.

At the one-year follow-up, 699 (77.1 per cent) of the 907 individuals interviewed and examined at baseline returned completed OHIP questionnaires.

Table I shows the response to each of the 41 OHIP items organized into the seven sub-scales described above. In this analysis, the response categories were reduced to three: a) very often or fairly often; b) occasionally; and, c) hardly ever or never. The response categories "very often" or "fairly often" represent the most stringent cut-off point and identify those who experience oral health-related problems on a relatively frequent basis.

The per cent of subjects responding "very often" or "fairly often" was approximately 10 per cent or less for all items except one: food catching in teeth or dentures. This response was given by 36.4 per cent of subjects. The other items most frequently endorsed in this manner were: dentures not fitting properly (11.4 per cent), being worried by dental problems (10.8 per cent), being self-conscious about the mouth, teeth or dentures (10.7 per cent), having discomfort while eating (10.6 per cent), having difficulty chewing some foods (10.5 per cent), and feeling that their appearance has been affected by oral problems (10.3 per cent). These seven items belonged to the functional limitations, pain and psychological discomfort sub-scales.

If those who reported experiencing problems "very often," "fairly often" or "occasionally" are included in the analysis, the frequency and pattern of responses change somewhat. Food catching in teeth or dentures remained the most commonly endorsed item, reported by 81.9 per cent of subjects.



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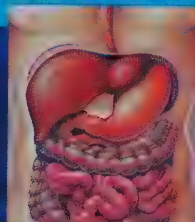
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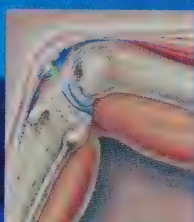
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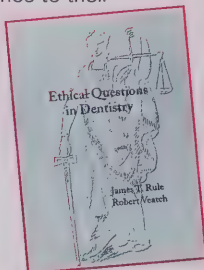
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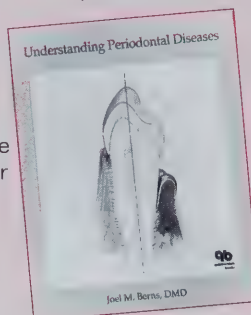
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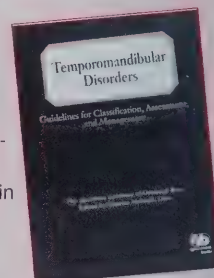


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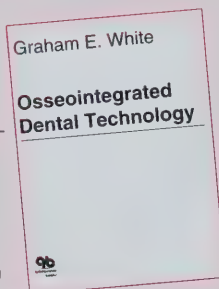


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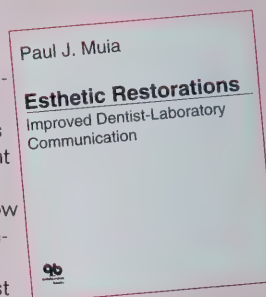
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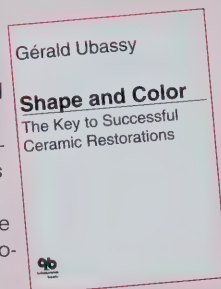
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Thirty-three of the remaining 48 problems were reported by 10 per cent or more, while 12 of these were reported by 25 per cent or more. Again, the 13 items endorsed by a quarter or more of subjects came predominantly from the functional limitations, pain and psychological discomfort sub-scales. Other commonly reported problems were: sensitivity of the teeth (41.9 per cent), sore spots in the mouth (40.1 per cent), painful gums (34.5 per cent), stale breath (30.5 per cent), discomfort while eating (34.5 per cent) and having to avoid eating some foods (26.9 per cent).

Table II presents OHIP data in a more succinct yet more revealing form. It shows the per cent of subjects reporting that they experienced one or more problems "very often" or "fairly often" for each of the seven sub-scales. This analysis clearly demonstrates that substantial proportions of this population experienced problems associated with oral conditions on a relatively frequent basis. More than two-fifths were frequently bothered by the functional consequences of oral disorders and slightly more than one-fifth were frequently bothered by oral pain. Slightly less than one-fifth frequently experienced some form of psychological discomfort because of poor oral health and one in six frequently experienced some form of disability with respect to eating and communication. The problems least likely to be reported were those concerning changes in social relationships. Only 1.2 per cent experienced difficulty in this area because of poor oral health. The analysis also confirms that functional limitations, pain and psychological discomfort were the most common types of problems affecting this population.

When these data were analyzed by age and gender, relatively few differences emerged. Subjects from 50 to 64 years of age were more likely than those 65 years of age and over to respond to one or more of the items from the pain sub-scale (25.2 per cent versus 15.1 per cent; $p < 0.001$), and women were more likely than men

TABLE II
Per Cent Responding "Fairly Often" or "Very Often" To One or More Items In Each Sub-Scale

Sub-scale	%
Functional limitation	43.5
Pain	21.2
Psychological discomfort	17.3
Physical disability	15.9
Psychological disability	7.3
Social disability	1.2
Handicap	7.1

TABLE III
Per Cent Responding "Fairly Often" or "Very Often" To One Of More Items In Each Sub-Scale By Dental Status and Dental Visiting Pattern

Sub-scale	Dental status		Dental visiting pattern (Dentulous only)		
	Dentulous	Edentulous	Regularly	Irregularly	Only with pain or other trouble
	%	%	%	%	%
Functional limitation	41.6	51.1	42.1	44.4	53.5
Pain	18.5	33.3**	18.8	30.6	25.6
Psychological discomfort	14.4	30.2***	11.7	22.2	24.0**
Physical disability	10.1	31.6***	9.4	11.1	10.6**
Psychological disability	5.6	14.9***	4.3	5.6	13.2**
Social disability	0.8	3.8*	0.5	0.0	2.3
Handicap	6.6	16.0**	4.8	11.1	14.0**

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$ — Chi square test.

to respond to one or more items from the handicap sub-scale (10.3 per cent versus 4.8 per cent; $p < 0.05$). No other significant differences were observed.

More substantial differences emerged when the data were analyzed by dental status. **Table III** shows that the edentulous were more likely than the dentulous to report problems with respect to six out of the seven sub-scales. The only sub-scale showing no difference was the functional limitations sub-scale, where two-fifths of the dentulous and over half of the edentulous subjects reported problems. This table shows that almost one-third of edentulous subjects

experienced problems "fairly often" or "very often" in the areas of pain, psychological discomfort and physical disability and one-in-six reported problems in the areas of psychological disability and handicap. While these problems were less prevalent among the dentulous, pain, psychological discomfort and physical disability were experienced by 10 to 20 per cent of those retaining natural teeth.

An analysis of responses by dental visiting pattern was undertaken for the dentulous only. Since 93 per cent of edentulous subjects reported going to the dentist only when having pain or other prob-





lems, there were too few subjects in the other categories to allow a similar analysis to be undertaken for this population. **Table III** shows that, among dentulous subjects, there were significant differences for four of the seven sub-scales. Those who visited a dentist only when having pain or other trouble were more likely to experience problems in the areas of psychological discomfort, physical disability, psychological disability and handicap than those making regular visits.

Discussion

The intention underlying the development of OHIP was to provide a measure that would capture the various ways in which oral disorders compromise the well-being of older people. It is distinct from similar measures in that it was based on an explicit conceptual framework and derived from the accounts of dental patients with a variety of oral conditions. Early work by the Australian investigators showed that OHIP had good measurement properties — it reached more than acceptable standards of reliability and validity when used in a study of elderly Australians.

The data presented here confirm that OHIP performs equally well when used on a Canadian population of older adults. They also reveal the extent to which oral disorders and conditions disrupt the daily lives of this population. While the per cent of subjects who responded "very often" or "fairly often" to the individual items was low, grouping of the items into sub-scales showed that substantial proportions of the population were affected. More than two-fifths reported functional problems, one quarter reported pain, and one in six reported that they were disabled in some way because of poor oral health. These problems were particularly marked among the edentulous and, for dentulous subjects, among those who failed to make regular use of dental health services. When it is remembered that these subjects were a random sample of the population, and not a group of dental patients with spe-

cific oral conditions, and that the definition of a positive response to OHIP items was fairly stringent, the extent to which the quality of life of these individuals was compromised by oral disease becomes even more striking.

Two other points are worth noting. First, many of the problems reported in this study seem to be linked to tooth loss and denture wearing, highlighting the value of the natural dentition in terms of the quality of life. However, as more older Canadians retain their teeth, both patterns of oral disease and the way in which they affect daily life are likely to change. Second, the study underlines the significance of dental care for this population group. Public policy has largely focused on improving and maintaining the oral health of children. In comparison, older adults have been neglected. Elderly people, for example, are less likely than any other age groups to be covered by dental insurance and they face multiple barriers in accessing dental services.¹³ A broad appreciation of the consequences of oral disease for older adults, as revealed by instruments such as OHIP, provides a powerful tool when advocating for oral health care resources for this section of the population. It also allows priorities to be identified and resources to be targeted at those conditions having the greatest impact on the quality of life of these individuals. As Ettinger¹⁴ has indicated in his discussion of rational treatment planning, the functional and social problems of elderly patients and the benefits associated with alternative treatments need to be taken into account when assessing their oral health care needs.

While OHIP is proving to be a useful measure, further work to test and develop the instrument is under way. Although older adults find the instrument acceptable and easy to complete, as reflected in the high response rates, a priority is to reduce the number of items to produce a more succinct, yet equally sensitive instrument. So far, it has only been tested as a part of oral health surveys. It also needs to be tested in clinical settings to

determine whether or not it is useful in planning treatment for the individual patient or in the assessment of treatment outcomes. It should also be tested in clinical trials to see if it is a useful measure of the broader social and psychological benefits associated with various treatments and procedures. There are plans to use OHIP in trials of implant technologies for edentulous and partially edentulous patients, which should give some indication of its value in this regard. It also needs to be tested on populations of young adults to see if it is sensitive to the way in which oral disorders affect the quality of life of younger people.

Finally, OHIP and comparable measures are of value in that they bring dentistry into line with contemporary concepts of health care by highlighting the broader personal and social consequences of oral diseases and disorders.⁴ In addition, they clearly indicate the significance of oral health for overall health and well-being, a fact not always fully appreciated by patients themselves and those who control health care resources. ■

Dr. Locker is a professor in the department of community dentistry and community dental health services research unit, faculty of dentistry, University of Toronto.

Dr. Slade is a consultant oral epidemiologist with the department of dentistry, University of Adelaide, Adelaide, Australia.

Reprint requests to: **Dr. D. Locker**, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, Ont. M5G 1G6

References

1. Denton, F.T., Feaver, C.H. and Spencer, B.G. The Canadian population and labour force: retrospect and prospect. In: Marshall, V.W. (ed). *Aging in Canada: Social Perspectives*, 2nd Ed. Markham, Ontario, Fitzhenry and Whiteside, 1987.
2. Leake, J.L. A review of regional studies on the dental health of older Canadians. *Gerodontology* 7:11-19, 1988.
3. Ettinger, R.L. and Beck, J.D. The new elderly: what can the dental profession expect? *Spec Care Dent* 2:62-69, 1982.
4. Locker, D. The burden of oral disorders in an older adult population. *Commun Dent Health* 9:109-124, 1992.

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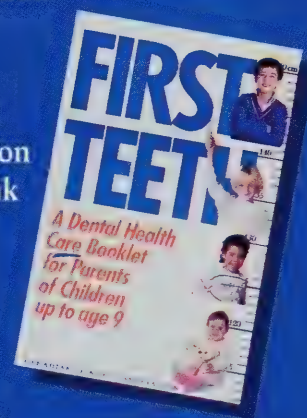
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Un Cas d'Ingestion de Prothèse Mandibulaire Partielle

Antony Carbery, DMD

Maryse Provençal, HD

Montréal, Canada

SOMMAIRE

Cet article rapporte le cas d'une personne âgée qui a accidentellement avalé sa prothèse partielle entière. L'ingestion n'ayant causé aucun signe ou symptôme direct, la découverte de la prothèse a été tout à fait fortuite. Néanmoins, il a tout de même été nécessaire de recourir à une procédure chirurgicale majeure pour parvenir à déloger la pièce.

ABSTRACT

This paper reports on the case of an elderly person who accidentally swallowed his partial denture. The ingestion did not result in any signs or symptoms and the denture was found totally by chance. A major surgical procedure was required to remove the prosthesis.

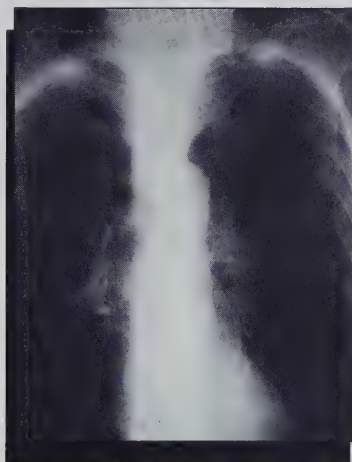
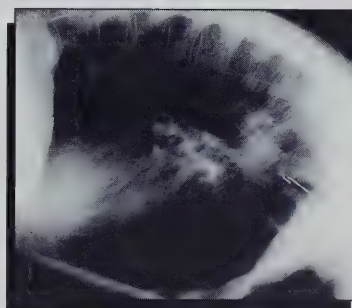
Description du cas

Le patient est un homme âgé de 80 ans, bénéficiaire dans un centre d'accueil depuis plusieurs années. Son histoire médicale se résume à des problèmes de schizophrénie, de maladie respiratoire obstructive chronique, ainsi que d'artériosclérose sévère accompagnée de maladie vasculaire périphérique. Au moment de l'incident, il se remettait d'une amputation récente

de la jambe gauche, secondaire à une gangrène. Ce patient était très difficile d'approche et avait fréquemment un comportement agressif envers le personnel infirmier. Comme il aimait beaucoup le chocolat, on lui en donnait régulièrement quelques morceaux pour lui plaire.

Le 29 mai 1991, il s'est plaint à son infirmière que le morceau de chocolat mangé la veille avait été très difficile à avaler. Par ailleurs, au cours de la même journée, on a rapporté sa prothèse dentaire inférieure disparue. À ce moment là, personne n'a fait le lien entre la disparition de la prothèse et le commentaire du patient concernant son morceau de chocolat car, mise à part une légère congestion pulmonaire de nature chronique, il ne présentait aucun symptôme. De plus, comme il était couramment soumis à une diète molle, il ne ressentait aucune difficulté à avaler sa nourriture. Les recherches pour retrouver la prothèse se sont donc poursuivies durant toute la journée.

Le lendemain, le patient a développé une fièvre de 38.2°C et présentait toujours une légère congestion. Soupçonnant une possible infection, le médecin traitant l'a référé en radiologie pour une série de radiographies pulmonaires. C'est alors que le radiologiste a remarqué un corps étranger métallique au niveau supérieur de l'oesophage (Figs. 1 et 2). Ce corps



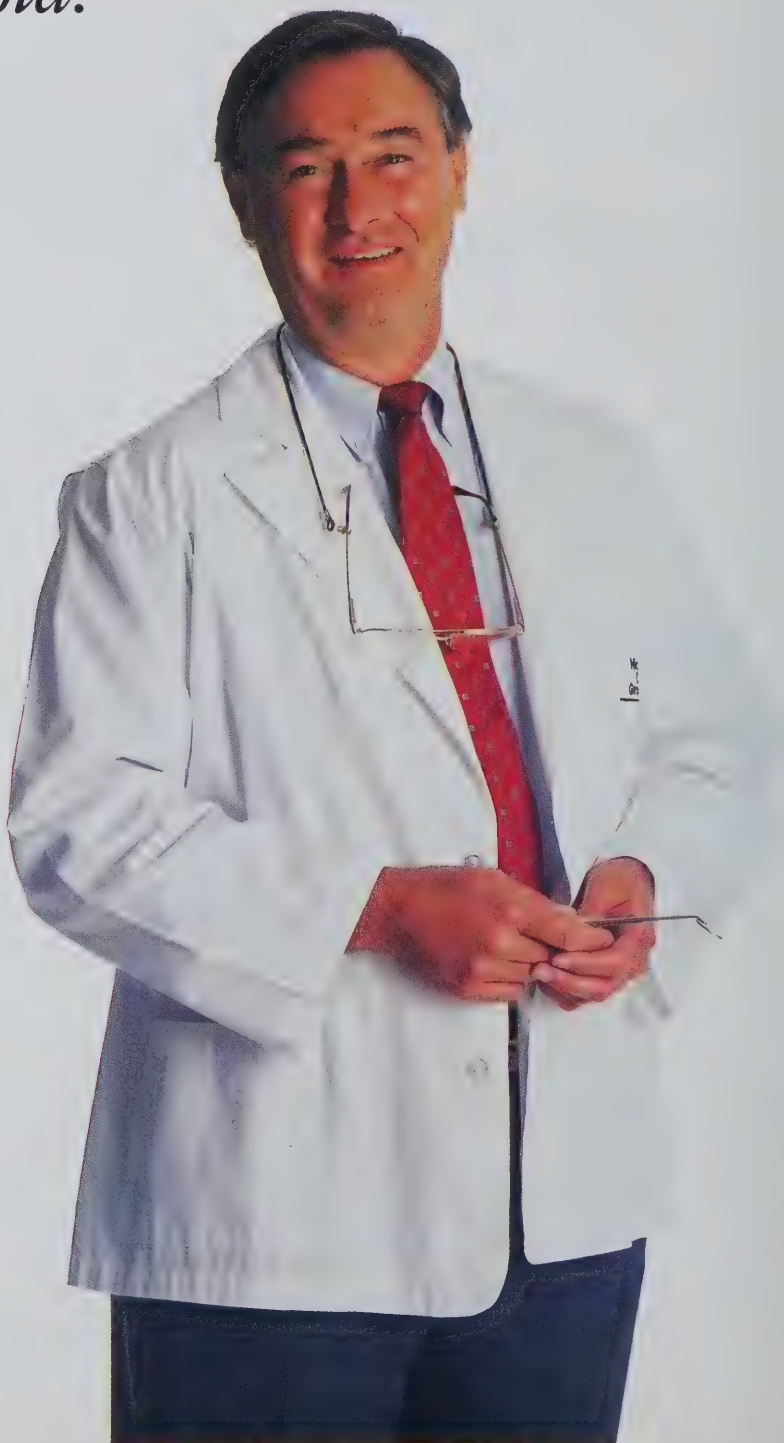
Figs. 1 et 2 : Le radiologiste a remarqué un corps étranger métallique au niveau supérieur de l'oesophage

étranger s'avérait être le squelette de la prothèse comportant une barre linguale pleine bilatérale ainsi que 2 crochets.

La rétention causée par les crochets rendait le retrait de la prothèse partielle impossible à l'aide d'un oesophagoscope. Le

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patient a donc été transféré dans un centre hospitalier afin de subir une procédure chirurgicale sous anesthésie générale. La pièce a été retirée sans complication par thoracotomie oesophagotomie droite.

Le 14 juin, le patient était de retour au centre d'accueil et présentait à ce moment là une forte congestion pulmonaire (il a même reçu quelques séances de clapping). Il est malheureusement décédé le 19 juillet, suite à une pneumonie.

Discussion

La littérature actuelle comporte quelques cas bien documentés de personnes ayant accidentellement avalé ou aspiré leur prothèse, mais il semble que l'inhalation de fragments d'appareils dentaires soit de loin la plus fréquente, ou du moins la plus rapportée. Dans ces cas, les signes et symptômes possibles sont une toux, une difficulté respiratoire, des sifflements, une cyanose, de l'hémoptysie, ou encore une difficulté à parler et à avaler si l'appareil s'est logé près de la gorge. Ces effets peuvent à l'occasion dégénérer en une obstruction complète des voies respiratoires, soit par le corps étranger lui-même ou secondairement à un spasme. Les signes et symptômes apparaissent généralement avant une semaine dans 67 p. cent des cas et avant un mois dans 81 p. cent des cas.¹ Toutefois, Poukkula et al² ont rapporté 2 cas où des fragments de prothèses sont demeurés jusqu'à 6 ans au niveau des poumons. Dans des cas de si longue durée, il est possible que le patient développe des problèmes d'asthme chronique, d'emphysème et de pneumonie.

À l'encontre de la plupart des articles que nous avons révisés, le cas qui est ici rapporté concerne un patient qui a avalé sa prothèse partielle entière. Cet incident n'a en soi occasionné aucun signe ni symptôme à court terme; la découverte de la prothèse a été fortuite et due au fait que le patient a développé des signes reliés à une infection parallèle. Cependant, les signes et symptômes que nous aurions pu être en mesure d'ob-

server si la prothèse était demeurée en place auraient été une difficulté à avaler, des vomissements avec ou sans présence de sang, des nausées, ainsi que de la fièvre.

Lorsque de tels incidents surviennent, il est important à prime abord de localiser le corps étranger. Dans le cas qui nous intéresse ici, il a été facile de détecter l'appareil dentaire par la radiographie conventionnelle grâce à la radio-opacité du squelette métallique. Mais il aurait pu en être autrement s'il avait été constitué entièrement d'acrylique. En effet, parmi les différents cas rapportés dans la littérature que nous avons consultée, la radiographie conventionnelle ne dévoilait que rarement la présence du corps étranger lorsque celui-ci était constitué d'un matériau de faible radio-opacité. Dans ces situations, on doit alors recourir à des procédés beaucoup plus sophistiqués tels que la tomographie axiale (CT scan), ou encore à des méthodes de visualisation directe comme la bronchoscopie et l'oesophagoscopie. Cela souligne donc l'importance de fabriquer autant que possible des prothèses dentaires à partir de matériaux radio-opaques ou du moins, de leur ajouter des pièces qui le sont, comme de petits disques métalliques⁶ par exemple.

Une fois le corps étranger localisé, plusieurs procédures sont à envisager pour le déloger. Comme dans toute intervention médicale, il convient d'utiliser en premier lieu une technique simple et rapide. Ainsi, en présence d'un patient en détresse respiratoire, la manoeuvre de Heimlich est appropriée; en cas d'échec, une trachéotomie doit être réalisée dans les plus brefs délais. Advenant une obstruction partielle, nous devons garder en mémoire la possibilité d'un laryngospasme ou d'un déplacement du corps étranger qui peuvent tous deux entraîner une obstruction complète des voies respiratoires. Il est alors essentiel d'assurer un niveau d'oxygénation adéquat, soit par trachéotomie ou soit par ventilation percutanée transtrachéale, avant même de tenter de retirer la pièce.⁵ Toutefois, on rencontre rarement une telle difficulté respi-

ratoire chez les patients puisque ce sont en général des fragments qui sont impliqués et que ceux-ci permettent un passage d'air suffisant.

La seconde étape consiste en l'utilisation d'un endoscope et d'accessoires comme les forceps rigides pour tenter de déloger le corps étranger. Et enfin, dans les cas plus complexes comme celui présenté ici, et lorsque toutes les autres procédures ont échoué, on doit avoir recours au retrait par chirurgie majeure.

Il est intéressant de noter qu'on rapporte plus fréquemment des cas d'aspiration ou d'ingestion d'appareil dentaire suivant un trauma, une perte de conscience, une intoxication par la drogue ou l'alcool, ou encore chez les personnes médicalement compromises ou portant une prothèse unilatérale ou mal ajustée. C'est pourquoi les précautions suivantes devraient être respectées en tout temps :

- 1) enlever les prothèses lors de sports violents;
- 2) ne jamais dormir avec les prothèses en bouche;
- 3) retirer les prothèses de tout patient devant subir une anesthésie générale, une sédation ou une intubation.

Conclusion

L'inhalation ou l'ingestion de corps étrangers d'origine dentaire n'est pas un fait particulièrement fréquent. Néanmoins, ces possibilités ne devraient jamais être négligées si un appareil ou un fragment d'appareil s'avère introuvable. Dans ces cas, une attention toute spéciale devrait être accordée aux signes et symptômes qui pourraient apparaître et des examens plus approfondis devraient être entrepris même en l'absence de ceux-ci, si un doute quelconque persiste. ■

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D'Antony Carbery pratique à Chandler en Gaspésie et songe à se spécialiser.

Maryse Provençal poursuit maintenant ses études et terminera bientôt son certificat en sciences de l'éducation à l'Université du Québec à Montréal. Elle travaille couramment pour les produits dentaires Kodak et vient de terminer un contrat comme enseignante en hygiène dentaire au cégep de Saint-Hyacinthe.

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Références

- Kim, I.G., Brummit, W. M., Humphry, A. et al. Foreign body in the airway: A review of 202 cases. *The Laryngoscope*, 83: 347-354, 1973.
- Knowles, J.E.A. Inhalation of dental plates — A hazard of radiolucent materials. *J Laryngology and Otolaryngology* 105: 681-682, 1991.
- Kroesen, G.A. et Haid, B.C. Fatal complication from swallowed denture following prolonged endotracheal intubation: a case report. *Anesthesia and Analgesia* 55:438, 1976.
- Newton, J.P., Abel, R.W., Lloyd, C.H., et al. The use of computed tomography in the detection of radiolucent denture base material in the chest. *J Oral Rehabil* 14:193-202, 1987.
- Ong, T.K., Lancer, J.M. et Brook, I.M. Inhalation of a denture fragment complicating facial trauma. *Brit J Oral and Maxillofacial Surg* 26:511-513, 1988.
- Perenack, D.M. Ingestion of mandibular complete denture. *JADA* 101:802, 1980.
- Poukkula, A., Ruotsalainen, E.-M., Jokinen, K. et al. Long-term presence of a denture fragment in the airway (A report of two cases). *J Laryngology and Otolaryngology* 102:190-193, 1988.
- Wagner, D.S., Coombs, D.W., et Doyle, S.C. Percutaneous transtracheal ventilation for emergency dental appliance removal. *Anesthesiology* 62:664, 1985.

ORAL HEALTH AND THE QUALITY...

(Cont'd from page 838)

- Atchison, K.A. and Dolan, T.A. Development of the geriatric Oral Health Assessment Index. *J Dent Educ* 54:680-687, 1990.
- Cushing, A.M., Sheiham, A. and Maizels, J. Developing sociodental indicators: the social impact of dental disease. *Commun Dent Health* 3:3-17, 1986.
- Nikias, M. Oral disease and quality of life. *Am J Pub Health* 75:11-12, 1985.
- Slade, G.D. and Spencer, A.J. Development and Evaluation of the Oral Health Impact Profile. *Commun Dent Health*. In press.
- Gilson, B.S., Gilson, J.S., Bergner, M. et al. The Sickness Impact Profile: Development of an outcome measure of health care. *Am J Pub Health* 65:1304-1310, 1975.
- Locker, D. Measuring oral health: a conceptual framework. *Commun Dent Health* 5:3-18, 1988.
- Locker, D., Leake, J.L., Hamilton, M. et al. The oral health status of older adults in four Ontario communities. *J Can Dent Assoc* 57:727-732, 1991.
- Hand, J.S., Hunt, R.J. and Kohout, F.J. Five year incidence of tooth loss in Iowans aged 65 and older. *Commun Dent Oral Epidemiol* 19:48-51, 1991.
- Locker, D., Slade, G.D., Leake, J.L. et al. Dental insurance and its effects among older adults in Ontario. *J Can Dent Assoc* 55:555-557, 1989.
- Ettinger, R. Clinical decision-making in dental treatment of the elderly. *Gerodontology* 3:157-165, 1984.

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TABLE 1

Body weight	Dosage in capsules of Rovamycine '250'
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15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

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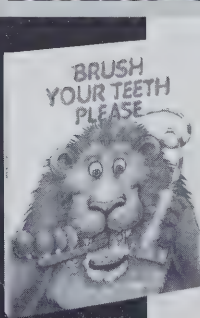


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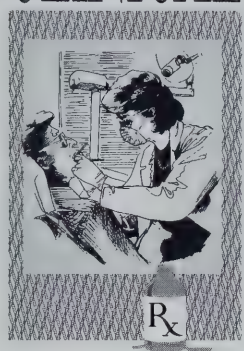
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Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts: A Case Report

Earle R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA

George D'Aguiam, DDS

ABSTRACT

The management of a very anxious patient who had undergone uneventful dental treatment in the past, but posed a problem when clinicians attempted to secure profound mandibular anesthesia, is discussed. This case report also examines the advantages and disadvantages of the Gow-Gates mandibular block technique, and describes the patient's subsequent management.

Key Words: mandibular block, Gow-Gates technique

SOMMAIRE

Voici le cas d'une patiente très anxieuse qui avait déjà eu des traitements dentaires sans problèmes, mais qui en a présenté un lorsque des cliniciens ont tenté d'anesthésier complètement sa mandibule. Dans cet article, on examine les avantages et les inconvénients de la technique Gow-Gates pour ce genre d'anesthésie et on indique comment a été gérée la patiente après avoir été anesthésiée.

Mots clés: anesthésie de la mandibule, technique Gow-Gates

Mrs. M.V., a pleasant 49-year-old female, was referred for dental treatment after numerous unsuccessful attempts had been made to secure profound local anesthesia in her lower left quadrant.

The patient's past medical history was essentially non-contributory. She had normal exercise tolerance (signifying normal cardiovascular and respiratory reserve), had no allergies and was not under medical treatment. On physical examination, she appeared healthy with a blood pressure of 132/87, and pulse of 77 beats per minute, medium volume and regular rhythm. Her airway was assessed and found to be entirely normal.

Mrs. M.V.'s past dental history included numerous amalgam restorations and several previous extractions, all performed under local anesthesia and without complications. About eight months prior to her referral, she successfully underwent routine restorative dentistry in quadrants one, two and four. An initial attempt at securing anesthesia in the third quadrant, using the conventional "direct thrust," Halstead mandibular block technique was unsuccessful. A total of seven cartridges of prilocaine with epinephrine (Citanest Forte) was used. Although subjective symptoms of anesthesia were obtained, tooth preparation was not tolerated. A

noticeable hematoma developed immediately following the seventh attempt at anesthesia. It manifested primarily extraorally and there was no compromise of the airway. The hematoma was managed conservatively with ice packs, pressure and antibiotics.

Mrs. M.V. was next treated one month later. Once again, attempts to achieve mandibular anesthesia were unsuccessful, despite the use of eight cartridges of Citanest Forte and nitrous oxide conscious sedation.

When the patient presented on referral, she was very anxious. This anxiety was not related only to dentistry. Mrs. M.V. was even more concerned and anxious about both local and general anesthesia. Although sedation was indicated, the patient did not want a general anesthetic because of her negative past experiences (severe nausea) following several otherwise routine general anesthetics.

At the referral appointment, following a thorough medical history, blood pressure, pulse and cursory physical examination, a panorex radiograph was taken of the patient. It was hoped that the radiograph would reveal any obvious cause for the failure of all previous attempts to achieve total mandibular anesthesia on the patient's left side. The panorex was shown to an oral radiologist who confirmed

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THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg)		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9) (serum creatinine 1.9-5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was a 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients as compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rates due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcers or upper GI bleeding are as follows:

INTERVAL	KETOROLAC	ASA
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS AND PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with (ketorolac tromethamine). Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L): Toradol is not recommended; **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serumtransaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol IM is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system:** dysuria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorder** - edema. **Incidence 1% or less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorder** - Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system:** chest pain, chest pain substernal, migraine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple 30 mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

These reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous System** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence Between 2 and 3%:** **Nervous System** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paresthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, pain, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSEAGE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half;

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL, or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: 1. Compendium of Pharmaceuticals and Specialties, 27th Edition, 1992. 2. TORADOL Product Monograph, Syntex Inc., Dec. 1992. 3. Lopez M et al. *Pharmacologist* 1987;29:136. 4. Yee JP et al. *Pharmacotherapy* 1986; 6(5):253-61. 5. Brown CR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):455-505. 6. O'Hara DA et al. *Clin Pharm Ther* 1987; 41:556-61. 7. Fragen RJ, Data on File, Syntex Inc., Document CL3837, 1987. 8. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. 9. Stanski DR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):405-445. 10. Data on File, Syntex Inc., Document #90027-1, 1989. 11. Rubin P et al. *Clin Pharmacol Ther* 1987; 41(2):182. 12. Bravo BLJC et al. *Eur J Clin Pharmacol* 1988; 35:491-4. 13. Stahlgren L, Data on File, Syntex Inc., Document RS-37619, 1991. 14. Greer JA, *Pharmacotherapy* 1990; 10(6 Pt 2):715-765. 15. Spowart K et al. *Thromb Haemost* 1988; 60:382-6. 16. Data on File, Syntex, Document #90027-2, 1989. 17. Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2):775-9. 18. Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2):945-1055. 19. Yee JP et al. Data on File, Syntex Inc., Document CL4855, 1986. 20. Goldblum R and Chen SS, Data on File, Syntex Inc., Document CL5363, 1990. 21. Data on File, Syntex Inc., Document #90027-3, May 1990. 22. Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. 23. Oosterlinck W et al. *J Clin Pharmacol* 1990; 30:336-341. 24. Cuffing CJ, et al. Data on File, Syntex Inc., Document CL4740, 1989. 25. Diebschlag W and Nocker W, Data on File, Syntex Inc., Document CL5468, 1989. 26. Molin J et al. Data on File, Syntex Inc., Document CL4624, 1988. 27. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. 28. Conrad KA et al. *Clin Pharmacol Ther* 1988; 43:542-6. 29. Harden NR et al. *Headache* 1991;31:463-4. 30. American Pain Society, *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain* 3rd edition, 1992. 31. Beaver WT. *Pharmacotherapy* 1990; 10(6 Pt 2):295. 32. Doyle DJ, Data on File, Syntex Inc., 1991. 33. Fricke JR et al. *J Clin Pharmacol* 1992;32:376-84. 34. *IMS Year in Review* 1991, IMS Compuscript Data, June 1992. 35. Mangioni C et al. Data on File, Syntex Inc., Document CL4899, 1980. 36. Hufteaman W et al. Data on File, Syntex Inc., Document CL4882. 37. Nedelman P et al. Data on File, Syntex Inc., Document CL3635, 1986. 38. Bloomfield S et al. Data on File, Syntex Inc., Document CL3658, 1986. 39. Sunshine A. Data on File, Syntex Inc., Document CL3674, 1986. 40. Data on File, Syntex Inc., 1992. 41. Rooks WH et al. *Agents and Actions* 1982;12: 684-690. 42. Rooks WH et al. *Drugs under Experimental and Clinical Research* 1985; 11: 479-492. 43. Camu F et al. *9th World Congress of Anesthesiologists, Abstracts Volume 1*: Abstract A0167. 44. Librach SL et al. *The Pain Manual* 1991; 26-30. 45. United Nations International Narcotics Control Board. *Narcotic Drugs* 1990;106, 115 and 118. 46. IMS Canada, August 1992.

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Fig. 1: A panoramic film showing sclerosis in the area of the left lingula and a possible break in the superior wall of the inferior alveolar canal.

sclerosis in the area of the lingula, although this did not necessarily signify an abnormality. He also noted a slight break in the superior wall of the inferior alveolar canal (**Fig. 1**) that could be a pathway for accessory innervation, although, again, this was not definitive.

After a frank discussion with the patient, it was decided to use a neuroleptanalgesia technique combined with a Gow-Gates mandibular block. Complete pre-operative instructions were given to the patient, both verbally and in writing. She was told to remain n.p.o. as of midnight on the night of the appointment, and was given ranitidine (Zantac, 150 mg) to take that evening and again two hours prior to the procedure. One hour before the start of the procedure, she was given triazolam (Halcion, 0.375 mg) orally and put in a quiet recovery room. The patient was monitored visually and by continuous pulse oximetry. One hour following oral premedication, she was brought into the operatory. Sedation at this point was excellent. The patient was fully conscious and responded appropriately to commands, but exhibited marked ptosis and appeared very relaxed.

A 22-gauge angiocath was placed in her right antecubital fossa, where droperidol (0.625 mg), fentanyl (40 g), and diazepam (4.0 mg) were given slowly through a continuously-running I.V. containing Ringer's lactate. A mouth prop was placed, and monitoring

consisted of blood pressure and pulse (every five minutes), visual inspection, precordial stethoscope, continuous ECG and pulse oximetry. The patient breathed spontaneously through a Magill anesthetic circuit containing 40 per cent nitrous oxide in oxygen.

Mandibular anesthesia was obtained by the Gow-Gates technique using a single cartridge of lidocaine (Octocaine 200, Novocol Pharmaceuticals). Mrs. M.V.'s treatment appointment lasted 110 minutes. In that time, a one-appointment endodontic procedure was successfully completed on tooth 37 (severely calcified canals).

After completion of the dental procedure, the patient was continuously monitored in the recovery room as to: blood pressure; oxygen saturation; ventilations; pulse; ability to maintain her airway; response to stimuli and verbal commands, as well as spontaneous eye opening. She was discharged to an escort with complete postoperative instructions. Prior to discharge, she was able to stand unassisted with her eyes closed (negative Romberg test) and ambulate without assistance. She tolerated oral fluids without nausea or vomiting.

Review of Gow-Gates Technique and Anatomy

In the Gow-Gates technique, the dental syringe is aligned using extraoral landmarks that form two intersecting planes. The first land-

mark is a line that passes through the lower border of the tragus of the ear and the corner of the mouth. Then, the syringe is oriented so that it is parallel with the angulation of the tragus to the side of the face (usually the body of the syringe is over the contralateral premolar area). This is a means of assessing the divergence of the ramus and determines the lateral direction of the needle.

By fully opening the mouth, the condyle moves anteriorly and inferiorly so that the intended site of injection — the lateral side of the condyle, just below the insertion of the lateral pterygoid — lies on the line joining the tragus and the corner of the mouth. If the mouth is not fully open, the needle will be inferior to the intended site, resulting in an ineffective block.¹

The area for needle insertion in the oral mucosa (intraoral landmark) is located within a 2.2 mm space, when the mouth is fully open, between the medial side of the deep tendon of the temporalis (laterally) and the pterygomandibular raphe (medially). The injection site is higher and more lateral than traditional inferior alveolar nerve block techniques. The needle tip is often placed at the tip of the mesial lingual cusp of the maxillary second molar, and then, with the syringe aligned as discussed above, the tip is moved just distal to this tooth.

The needle is advanced slowly until it touches bone. The condylar neck is contacted at an average depth of penetration of 25 mm in an adult. Penetration must not exceed 28 mm, which indicates incorrect alignment laterally through the sigmoid notch or medially into the parotid. If bone is not contacted, the needle is withdrawn slightly and redirected, usually posteriorly (the syringe is moved anteriorly), until bone is contacted. A positive aspiration usually occurs only due to penetration of the maxillary artery, which is located inferiorly and medial to the intended site.

The intended site is a relatively avascular area of loose fatty areolar tissue. It is bounded by the bony surface of the condyle posteriorly, by the lateral pterygoid muscle su-

TABLE I**Some Possible Causes For Inability To Secure Profound Mandibular Anesthesia**

- The inferior alveolar nerve giving off a collateral posterior dental branch before entering the mandibular canal.
- accessory innervation from the mylohyoid, buccal, lingual and/or auriculotemporal nerves.
- presence of infection.
- insufficient volume or concentration of local anesthetic.
- a bifid inferior alveolar nerve.
- hematoma (usually from the inferior alveolar or maxillary artery) diluting the solution.
- altered anatomy — particularly the inferior alveolar nerve entering the ramus higher than expected.
- local anesthesia-induced change in nerve morphology or function.
- intravenous injection of local anesthetic solution.
- medical conditions leading to a hyperdynamic circulation.
- poor technique.

TABLE II**Some Of the Advantages Of the Gow-Gates Inferior Alveolar Nerve Block**

- 1. Accessory innervation of mandibular teeth is anesthetized with one injection.
- 2. Reduced interstitial pressure resulting in:
 - a) reduced trismus;
 - b) solution is not forced into capillaries by pressure; therefore potential for increased duration of action.
- 3. Less incidence of positive aspiration and reduced requirement for vasoconstrictor due to reduced vascularity of site.
- 4. Higher success rates than conventional mandibular block.

teriorly, medial pterygoid medially and ramus of mandible laterally. This is the posterosuperior aspect of the pterygomandibular space.

With the aid of gravity and the muscular functions of jaw movements, the anesthetic solution floods the entire pterygomandibular space to reach all three oral sensory portions of the mandibular nerve. This diffusion in the space will readily expose 10 mm of nerve to anesthetic, which is what DeJong states is required to prevent saltatory conduction.² The nerves anesthetized by this single injection include: inferior alveolar, mental, lingual, nerve to mylohyoid,

buccal, and the auriculotemporal nerve.³ Thus, the need for multiple injections due to supplementary innervation of the mandibular teeth is eliminated.

Unlike the Halstead (direct thrust) method for inferior alveolar nerve block, the Gow-Gates technique does not require the injection to be close to the branches of the mandibular nerve to block conduction. The solution can diffuse as far forward as the long buccal nerve as it passes through the antero-inferior portion of the pterygomandibular space. This feature may be a function of volume of solution used.⁴ The potential volume of the

space has been estimated to be 2.0 mL. Studies have shown a higher success rate of buccal nerve anesthesia when 3.0 mL of solution are used versus 1.8 mL, so that greater diffusion occurs with larger volumes.

Discussion

This was clearly a case involving accessory innervation of the left inferior alveolar nerve. Malamed has described the Gow-Gates technique as being over 95 per cent successful when compared to a success rate of 80-85 per cent with conventional techniques.³ The chance of positive aspiration is also said to be less (two per cent versus 10-15 per cent).³ It also shows an equally high success rate when used with plain local anesthetic solutions, such as when the use of epinephrine is absolutely or relatively contraindicated. Trismus is extremely rare, although temporary paralysis of cranial nerves three, four and six has been reported on one occasion.³

In this case, the panoramic film was suggestive of a possible abnormality in the area of the left lingula (sclerosis) and a break in the superior wall of the inferior alveolar canal. The absence of definite radiologic abnormalities, however, does not rule out the possibility of accessory innervation or even a bifid inferior alveolar nerve. **Table I** reviews some of the possible causes for the inability to secure profound mandibular anesthesia, while **Table II** lists some of the advantages of the technique.

While this patient remained conscious during her dental treatment, her extreme anxiety was easily managed with a combination of oral premedication and low-dose intravenous agents. Because of her past history of extreme nausea following general anesthetics, drugs that may contribute to nausea (N₂O, narcotics) were kept to a minimum. At the same time, ranitidine (Zantac), an H₂ antagonist, was used to increase stomach pH. Droperidol in low doses has been shown to be an effective anti-emetic when used intravenously. This patient experienced no nausea either intraoperatively, in the recovery room, or the following day. Recovery was quick



and uneventful. The patient was monitored and discharged according to stringent criteria established by the anesthetist. With less anxiety, a general dentist could manage a similar patient with conscious sedation (N₂O or oral sedation) in conjunction with the Gow-Gates technique. ■

Dr. E.R. Young is an associate professor and the head of the department of anesthesia, faculty of dentistry, University of Toronto, and the Wellesley Hospital, Toronto.

Dr. G. D'Aguam is a junior resident, department of anesthesia, faculty of dentistry, University of Toronto.

Reprint requests to: **Dr. E.R. Young**, Department of Anesthesia, Faculty of Dentistry, University of Toronto, 124 Edward St., Toronto, ON M5G 1G6

References

1. Kafalins, M.C. and Gow-Gates, G.A.E. The Gow-Gates Technique for Mandibular Block Anesthesia. *Anesth Prog* 34:140-142, 1987.
2. Gow-Gates, G.A.E. and Watson, J.E. Gow-Gates Mandibular Block-Applied Anatomy and Histology. *Anesth Prog* 26:192-200, 1989.
3. Malamed, S.F., In: *Handbook of Local Anesthesia*. C.V. Mosby Co., St. Louis, 1980.
4. Coleman, R.D. and Smith, R.A. The Anatomy of mandibular anesthesia. Review and analysis. *Oral Surg, Oral Med, Oral Path* 52(2):148-152, 1982.

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land: General practice for sale, two operatories, well established. After 40 years solo practitioner wishes to retire. Excellent opportunity for experienced dentist or ambitious new graduate. Call (416) 734-9214 or respond to CDA ACCESS Box 2589. (09/11)

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NOVA SCOTIA - Dartmouth: For sale, six-year-old general practice, excellent location in high traffic Dartmouth business area. 95% adult practice with insurance, attractive leasehold with two fully-equipped operatories, owner could aid in transition. Contact Mr. Bill Tingley (902) 835-1103. (07/10)

NOVA SCOTIA - Annapolis Valley: Practice for sale in Nova Scotia Annapolis Valley. Very busy family practice, 1,200 sq. ft. office in a medical/dental professional centre. Ultra-modern dental set-up, good gross, priced to sell. For more information call (902) 245-5666. (04/13)

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(07/13)

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ALBERTA - Slave Lake: Seeking associate dentist for a busy general practice 248 km north of Edmonton. Excellent remuneration. Great outdoors includes: fishing, hiking, golfing, water-skiing and sunbathing. Please call Marina Maunder at (403) 849-4477, Fax (403) 849-6332. (09/11)

ALBERTA - Edmonton: Full-time and/or part-time dental associates required immediately for busy enclosed mall practice, must be willing to work some evenings and weekends. Contact Dr. Ken Quon (403) 466-9889 or please respond to CDA ACCESS Box 2591. (09/11)

SASKATCHEWAN - Regina: Seeking dental associate for modern office in

large medical/dental facility. Good opportunity for the right person. For details call Dr. Ronald Katz, (306) 924-1494, or write to: 235B Albert Street N., Regina, Saskatchewan S4R 3C2. (08/10)

SASKATCHEWAN - Regina: Associate wanted, starting Nov. 1, 1993, buy-in option after one year. Contact Laurie (306) 522-6219. (09/11)

MANITOBA - Northern Region: Associate wanted for general dental practice. Three operatories, panorex, 90% of patients are insured, "salary is negotiable". Region offers a good school, great fishing, golfing, hunting, etc. Respond to CDA ACCESS Box 2600 or phone (204) 623-3394.

(10/12)

ONTARIO - Scarborough: Oral and maxillofacial associate required for well established practice in Scarborough, Ontario, with the option for a partnership within one year. Please respond to CDA ACCESS Box 2592.

(09/11)

ONTARIO - Deep River: Partnership available with busy family practice. Contact Dr. Vantomme (613) 584-2768 (W), or (613) 687-6859 (H). Two hours east of North Bay, two-and-a-half hours west of Ottawa. (08/12)

ONTARIO - Ottawa: Dental associate wanted. Progressive multi-disciplinary group practice, potential partnership. Contact Dr. Gunther (613) 236-4557. (06/10)

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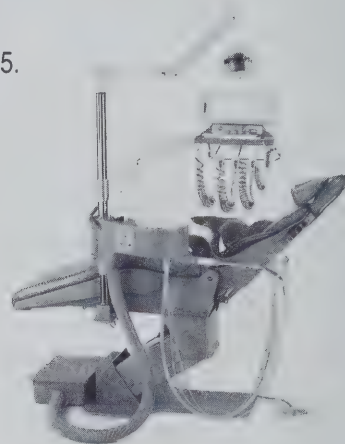
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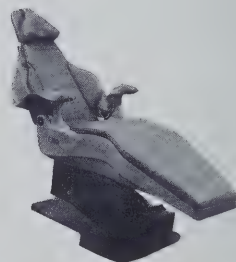
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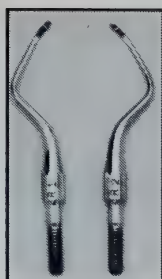
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Advertisers' Index

Abel Computers	850
APM Sterngold	802
Ash Temple	792
Bisco Dental	IBC
Caulk Canada	OBC
CDA DIS	840
CDA First Teeth	839
CDA Leasing	808
CDAnet	842
CDA RSP	814
CDA — Taking Care of Business	811
CDLC	828
CDSPI	812
Colgate	798
Dentsply	IFC
Hoechst-Roussel	795, 844
Premier Dental	796, 816
Procter & Gamble	826, 827
Quintessence	836
Syntex	834, 835, 846, 847
Readers Digest	844
Teledyne	801
Warner Lambert	807



**FDI
1994**

The Canadian Dental Association Out-of-Country Seminars

...In Israel

February 16 - 28, 1994

*in collaboration with
the Israel Dental Association*

This unique 13-day tour to Israel, the "Promised land flowing with milk and honey", takes you to the modern metropolis of Tel-Aviv and into the ancient ports of Jaffa, Acco, Haifa and Caesarea. Stretching between the Mediterranean and the Red Sea, Israel beckons you to a voyage of discovery offering sites which date back to ancient times. You will travel through the lush region of Galilee where Christianity had much of its origins and you will have the opportunity to admire the splendor of the snow-capped peaks of Mount Hermon. You may also choose to bathe in the Dead Sea, which, located at 1300 feet below sea level, would be a totally desolate area were it not for its oasis offering refreshment to the traveller. Finally, you will ascent to Massada, the last stronghold of the Jewish Zealots against the Romans, standing as a memorial to this day.

...In Turkey

April 15-28, 1994

*in collaboration with
the Turkish Dental Association*

This unforgettable 14-day journey will take you to the former Ottoman Empire as well as to the modern city of Istanbul. Old and new come together in this country where past, present and future blend to offer the most intriguing and fascinating sites. Through breathtaking landscapes, you will visit a country that stretches from undisturbed coves along dazzling multifaceted coasts to silent peaks of towering mountains. Your voyage will let you discover ancient marble temples built in honor of the gods and stirring architecture reminiscent of times long past. Among the numerous sites that you will enjoy on this unforgettable trip is Pammukkale, a city where natural springs and thermal water pools flow from terraced cliffs. You will walk through Goreme, an ancient city where 7th century Christians carved shelters directly from the rock formations. Tour also consists of visits to Ankara, Cappadocia, Antalya, Kusadasi and Ephesus.

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82ND WORLD DENTAL CONGRESS • VANCOUVER OCTOBER 2ND TO 8TH, 1994

UPDATE • UPDATE • UPDATE • UPDATE • UPDATE

The Privilege is now ours



FDI 1994 in Vancouver is just around the corner! Nothing reminded me more of this than my visit to Sweden just a few weeks ago. The FDI 1993 Congress was held this past August 29 - September 2 in the charming European city of Göteborg, Sweden. It was here that I had the privilege of participating in a myriad of events and programs put together by

both the Swedish Dental Association and FDI. It was a refreshing and exciting time that inspires me as I look ahead to next year's Congress in Vancouver from October 2-8, 1994.

The Swedish Dental Association did an amazing job in hosting FDI 1993! The FDI's 1993 Congress figures show that more than 9,500 participants attended the Congress, of which 4,750 were dentists! The scientific presentations were outstanding and most of the lectures were "sold out" and in many cases "overflowing".

The success of the Congress was found not only in the participation but also in the support and hospitality of all the Swedish dentists as they welcomed their colleagues from around the world. The spirit of the Congress was indeed very warm and inviting. As FDI Congresses are indisputably known for their international participation, this event was no



Vancouver FDI 1994 Booth in Sweden.



The passing on of the FDI flag.



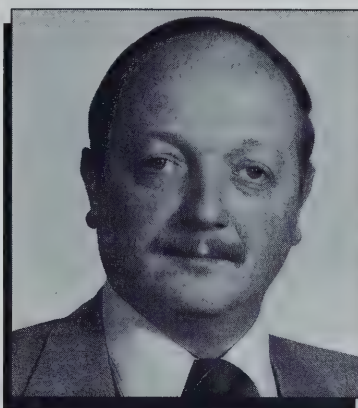
October Is CFDE Month

"To know where you're going, you must know where you've been"

October is CFDE month, a time to review past accomplishments of the Canadian Fund for Dental Education and a time to ask for your help in planning for the future.

CFDE is proud of all it has achieved by providing support to vital dental education, research and awareness programs, and by offering a helping hand to students in financial difficulty. Today, the cost of dental education may be the determining factor for students considering a career in dentistry. Regardless of a student's desire, ambition or academic success, he or she may simply not be able to afford the costs of tuition, textbooks and supplies, and living expenses while at school.

Over the years, endowment and developing funds to assist Canadian dental students, as well as dental education and research programs, have been established in honor of special individuals. In fact, assisting students in financial difficulty is one of CFDE's most important programs. The Dr. Nicholas A. Mancini Fund, the Dr. G.W. Barrett Memorial Fund and the Dr. Allan Chantler Fund are all CFDE endowment funds established for the specific purpose of assisting financially disadvantaged students. CFDE's financial support helps to ensure a brighter future for these students, who will become part of the next generation of Canadian dentists. This support is critical and is obviously very appreciated. A thankful student writes:



*Dr. Gordon Thompson
Chairman, Canadian Fund for Dental Education*

"My family and myself would like to express our sincerest thanks for what the CFDE has done for us. The funds reached us at a time when our bank account was reaching its limits. We find the cost of living in the city and being a student to be very expensive...When I have completed my studies I intend to return to Labrador to work along the North coast. It is very difficult to get medical and dental personnel to work in this area. I would like to get more native people interested in some aspect of the dental profession. Your contribution will go a long way to enabling me to attain my goal. Thank you."

Three new developing funds were established in 1993 in memory of three Canadian dentists. Dr. Donald E. Williams, a prominent Moncton, New Brunswick, practitioner and former CDA president; Dr. Barbara Wilson, an active member of the executive council of the Ontario Dental Association who practices in Milton, Ontario; and Dr. William G. Madronich, from Hamilton, Ontario, have each had a fund named after them in

appreciation of their lifetime of dedication to the advancement of dental research and education. The CFDE welcomes donations to each of these funds.

30 Years Of Service To Dentistry

Providing assistance for students in financial difficulty is only one of the many important programs funded by CFDE. Since 1962, CFDE has provided almost \$4 million in support of essential programs for the advancement of dentistry, including:

- The CFDE/ACFD Summer Teaching/Management Institute's program, designed to provide Canadian dental educators with practical teaching methods that can be directly applied in laboratories, seminars, clinics and lectures, has received CFDE support each year since it began in 1986.
- CFDE/CDA annual continuing education teaching conferences have been sponsored by CFDE for the last 30 years. Past conferences have focused on such topics as anesthesia, operative dentistry, nutrition, dental ethics and hospital dentistry. The featured topic for the 1994 conference will be Dental Clinical Decision-Making and Epidemiology.
- Teacher/researcher training fellowships; unrestricted and undergraduate grants to dental schools, which assist faculty programs and provide grants to encourage excellence in undergraduate students; support of special research projects within the universities; support of student table clinics and conferences; and workshops and con-

ferences for allied dental health professionals are only part of the splendid programs that receive CFDE assistance each year.

Again, as this faculty researcher makes abundantly clear, CFDE's support of these programs is vital and appreciated:

"...We have almost finished the courseware on the Anatomy and Anesthesia of the Mandibular Nerve...The contribution of the CFDE has been highly appreciated in the realization of this project. ...Once more, I thank CFDE for its financial and moral support for the development of this second software in Dentistry."

A letter from the National Dental Examining Board reads:

"...Thank you for the CFDE contribution to the 1992 Anniversary Symposium. The NDEB has received clear direction from the symposium and will modify the current certification process so it will continue to maintain a national standard and be acceptable to the licensing authorities and the Canadian faculties of dentistry."

And a participant in the CFDE/CDA Students' Conference writes:

"I would like to thank the CFDE on behalf of the dental students for the generous financial support given to the Canadian Dental Students' Conference. Numerous extremely important issues affecting students are currently being dealt with in this country and your contribution allowed the dental students of Canada's perspective on these matters to be voiced. Again I would like to thank the CFDE for their support and am pleased you believe in the value of student input in the decision-making process."

In a very real way, the sense of accomplishment realized by the success of these programs and the advancements made in research and dental education is to be shared by all CFDE donors. It is the generosity of loyal CFDE contributors that make support for needy students and the many other CFDE-funded programs possible.

Progressing To The Future

CFDE's commitment to dentistry and improving oral health will be

increased in January 1994, when we join with the Canadian Dental Foundation (CDF), which includes the Sydney Wood Bradley Library Trust Fund; the Canadian Dental Research Foundation Trust (CDRF); and the Grieve Memorial Lectureship Trust to form the **Dentistry Canada Fund**.

The Dentistry Canada Fund will have a broader scope than CDA's original dental charities and trusts, while maintaining the mandates of each of them. The Dentistry Canada Fund will provide donors with more options, by allowing them to support even more programs. Whether it is support for needy students, dental research and education programs, special conferences, or initiatives directly related to the practising dentist, such as continuing education courses, a menu of choices will enable sup-

porters to channel their donations to the programs that are most important to them.

As CFDE becomes part of the Dentistry Canada Fund, planning for the future starts now — with your contribution. When you receive your CFDE letter this month, please remember the words of a thankful recipient: "Your contribution will go a long way to enabling us to attain our goal."

Please send your donation today to the Canadian Fund for Dental Education, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6.

Tax receipts are issued for all donations. Individuals who contribute \$50 or more will have their names recorded in the CFDE *Annual Report* and Honour Roll. ■

*Dr. Gordon Thompson
Chairman, Canadian Fund for
Dental Education*



CFDE/CDA TEACHING CONFERENCE



CALL FOR TOPICS

The Association of Canadian Faculties of Dentistry is interested in receiving written submissions for future Teaching Conference topics.

Submissions should be forwarded to the Central office, 109-1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6 and should include:

- proposed title of Conference and justification
- name of co-ordinator or Chair of the Teaching Conference
- name(s) of facilitator(s)
- subtitles or themes, including a brief program description
- tentative budget, including the registration fee for non-funded participants
- venue

To date the CFDE/CDA grant for the Teaching Conference has been \$10,000. This grant is intended to cover two delegates from each Canadian Dental Faculty. In recent years the Conference has been held in Toronto because of its convenience for travellers, but other locations can be considered.



Do We Need "Socialized Dentistry" in the Nineties?

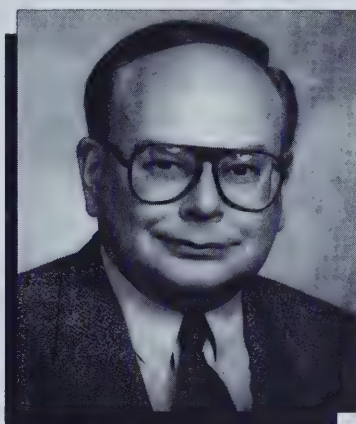
Marcel P. Tenenbaum, B.Sc., DDS, M.Sc. (Comm. Dent.)

The June 1993 issue of the *Journal of the Canadian Dental Association* carried an article written by CDA past-president Jack W. Niedermayer entitled "Socialized Dentistry for Children in Saskatchewan: Its Beginning — 1974; Its demise — 1993" (59(6):522-527).

Canadians have enjoyed the benefits of a universal health care system for over 20 years, which may explain why Dr. Niedermayer's contribution caught my eye. In fact, I had not read any other articles that referred to socialized medicine or socialized dentistry in quite some time, and the terms certainly seem to have fallen out of fashion in Canada. I began to question whether Dr. Niedermayer was correct in using them to describe the Saskatchewan health care experience. My opinion, after reading the article, is that he was both right and wrong. Socialized medicine or socialized dentistry can be used to describe some segments of the Saskatchewan plan, but not all.

The American Myth

Until recently, some Americans argued that the high cost of health care in Canada was the direct result of socialized medicine. In fact, Canada does not have socialized medicine. Ninety-five per cent of Canadian physicians (and almost all dentists) work for themselves, not for their provincial government or the federal government. Furthermore, 90 per cent of Canadian hospitals are owned by private, non-profit corporations with publicly-funded operating budgets (major exceptions are federally owned



Dr. Marcel P. Tenenbaum

and operated veterans' hospitals). What we have is a publicly-funded system that pays private providers, as opposed to a largely privately-funded system, which is what exists in the United States. In fact, the American system is much more expensive than Canada's. Canada spends around nine per cent of its gross national product on health care annually. The United States spent \$736 billion, or 13 per cent of its gross national product, on health care in 1991. Even so, 35 million Americans had no health insurance and another 20 million had only minimal coverage. It is revealing that American health reformers refer to the Canadian system as "medicare for all."

The School-Based Dental Team

Dr. Niedermayer is correct in describing the Saskatchewan school-based dental team approach as socialized dentistry. It

allowed for direct service provision using a supervising dentist, two dental therapists as the primary providers, three dental assistants and one receptionist. These individuals were all salaried employees. Dental care was provided to approximately 155,000 children in 526 permanent dental clinics, which were located in schools throughout Saskatchewan.

This system was the Saskatchewan government's reaction, in 1974, to the inability of the fee-for-service private practice system to provide appropriate, affordable and accessible dental care in a province that was poorly supplied with dentists at that time. This is still what Canadian dentists generally have in mind when they think of socialized dentistry.

Public Funding Of Health Care

When the Saskatchewan system was introduced, treatment was provided in private dental offices on a fee-for-service basis once children reached the age of 14. This part of the plan used public funds to pay private dental practitioners, and should not be described as socialized dentistry.

It is important to remember that Quebec dentists are private practitioners, even though they may bill the provincial Health Insurance Board (RAMQ) for services rendered under the children's plan or the welfare recipients' dental plan. Similarly, Ontario dentists remain in private practice when they participate in the government's CINOT program. The money dentists receive in payment for treatment pro-

vided under these plans comes from a public source, the taxpayers' dollars. But under the Canadian system, the patient remains free to go to the health professional of his or her choice. It therefore seems ironic that patients in the United States would actually lose this choice if the Clinton administration implements the Health Maintenance Organization (HMO)'s system, which is currently under consideration.

Accessibility To Dental Care

The vast majority of Canadians receive dental care from private practitioners. Private practice in Canada is well-suited for the healthy, employed, dentally conscious middle-class patient. These individuals rarely have a problem with accessibility to private dental care, can generally afford necessary treatment, and typically practice good oral hygiene (the ideal patient that we all love to have). Since the 1960s, the growth of dental insurance plans has provided practitioners with new sources of revenue, and made private practice even more attractive. We can truly boast that we provide "the best dental care in the world." But we only provide that care to a distinct segment of the Canadian population — the middle and upper class.

Not every patient or prospective patient in Canada fits the middle-class patient description. A fair proportion of Canadians are poor, but not eligible for the dental benefits provided under Canada's welfare system. Due to the recession, some of these individuals lost their dental insurance along with their job. The world of poverty also includes the homeless, the single parent family (usually headed by the mother), the unemployed and unemployable, the working poor (those who are uninsured, non-unionized and in minimum-wage positions), the homebound and the chronically ill, and the institutionalized elderly and handicapped. For these people, the middle-class habit of regular dental care simply doesn't exist.

Who Will Fill the Vacuum?

It is time for Canada's dental leaders to acknowledge that the dental needs of these people do not fit easily with the concept of private practice. Dental care is financially out of reach for the poor, and many practitioners have also preferred, until recently, not to treat them. This reluctance to treat less advantaged patients may be changing, however, due to the difficult economic circumstances that exist in Canada today.

Private practice is most efficient when patients understand the need for ongoing dental care, accept treatment, and cooperate while receiving care. But handicapped people and people with chronic diseases (among them a great number of elderly) take longer to treat. In fact, special equipment and training may be required to treat them satisfactorily. It is incumbent on our profession to bring forth imaginative solutions that will make dental care accessible to the members of these various special care groups.

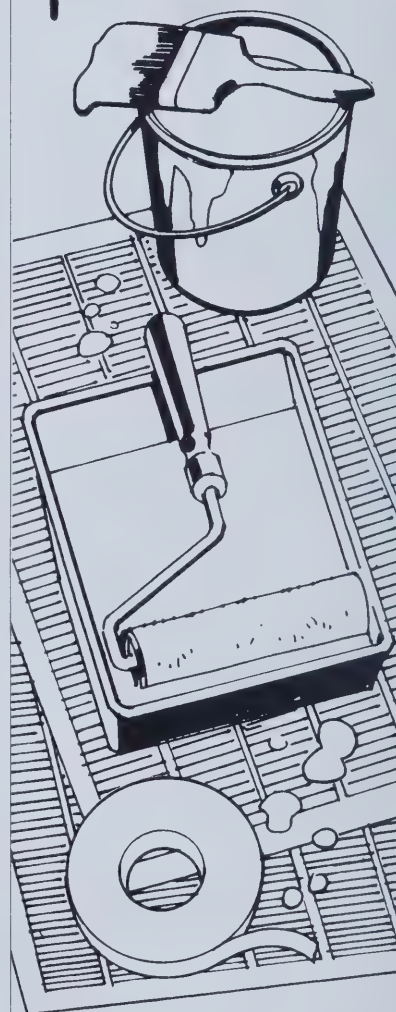
An Urgent Warning

When we, as dentists, appear to be unwilling to act on these issues, we create a vacuum or void that the members of other health care professions will gladly fill for us. We cannot let this happen.

If we stubbornly maintain our refusal to participate in any dental scheme that is not strictly a "fee-for-service, private practice, private patient" model, we will only have ourselves to blame if others come up with innovative solutions to answer the need for good affordable dental care for all Canadians. ■

Dr. Tenenbaum is a dental public health specialist at the Public Health Unit of the Verdun General Hospital. He also a faculty lecturer in both McGill University's faculty of dentistry and the faculté de médecine dentaire at Université de Montréal. He is a past-president of the Quebec Association of Public Health Dentists and a past associate editor of the *Journal of the Canadian Dental Association*.

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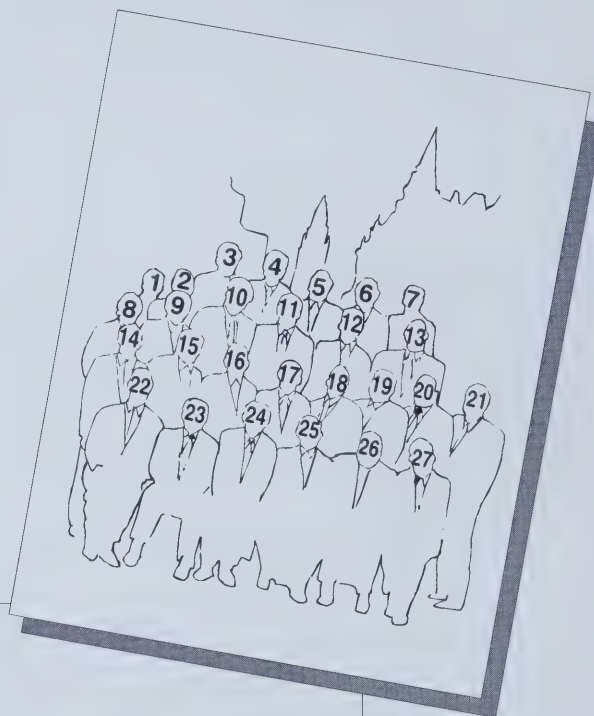
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CDA annual review 1992-1993



CANADIAN
DENTAL
ASSOCIATION
SUPPLY
1993



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CONTENTS

- 5 President's Message
- 7 Executive Director's Message
- 9 Advice and Influence
- 12 Innovation
- 14 Professional Development
- 17 Professional Standards
- 19 Communications
- 22 Membership
- 26 The Bottom Line
- 28 Board, Councils,
Commission
and Committees



CDA Mission

The CDA is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians



CDA Goals

To ensure that the association is able to identify, and position itself on all subjects critical to dentistry which are of importance to its members.

To develop positions, policies and programs which will provide optimal, accessible oral health care for Canadians.

To develop programs, standards and services at the national level, which will enrich the profession and the personal life and character of its members.

To develop and maintain an effective national communication strategy and programs to communicate with CDA publics and stakeholders on all matters under the mandate of CDA.

To provide a national forum which facilitates the exchange of ideas on, and the development of, unified positions and standards on issues of interest to dentistry.

To ensure that the association has the necessary resources to effectively manage all programs necessary to fulfil its mandate.

In 1991-92, CDA developed and approved a revised mission statement and comprehensive goals. The new mission statement and goals set the tone for all of CDA's activities on behalf of our members, Canadian dentists and the Canadian public.



1992-1993 CDA ANNUAL REVIEW

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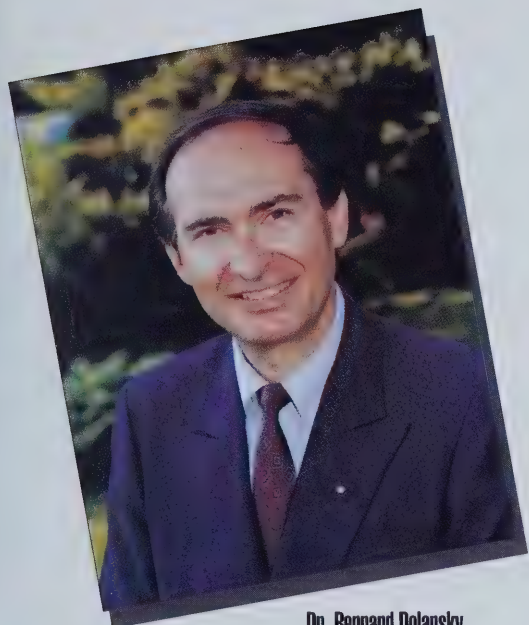
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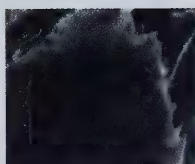
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Canadian Dental Association

1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6



Dr. Bernard Dolansky,
CDA President



PRESIDENT'S MESSAGE

A year ago, when I took on the privilege and challenges of serving as CDA president, there were three main personal goals that I wanted to achieve during my term in office: to return CDA to a strong financial footing, to encourage and improve our membership support, and to provide sound and positive leadership to the dentists of Canada.

In preparing my annual report to you on the year that has just passed, I've had the chance to look back on these goals and on the milestones, achievements and activities that accompany them.

Without a doubt, the most urgent challenge of the past year was to bring CDA back to a surplus position after two years of deficit funding. As referenced further in this report, I'm proud to say that our revenues exceeded our expenses by more than \$200,000 in 1992 and we also expect to show a surplus in 1993, which will again be applied to debt-reduction. Getting the review and rationalization of finances accom-

plished was essential to being able to pursue the ongoing program and service initiatives that have become so important a part of the role that CDA plays in the professional and practice lives of its members.

Although fiscal responsibility was an urgent concern, the membership issue is most important for our credibility and our future financial security. In the area of membership numbers, our goal was to stop the decline in membership in our largest voluntary province, Ontario. Through a more aggressive membership campaign, improved member benefits and better communication, we were able

to make some progress this year and expect a small increase in membership numbers from Ontario by year end. With this change in trend, CDA is cautiously optimistic for its future, but we know that we have a responsibility to continue to provide the leadership and direction that our members in every part of Canada expect as we face a rapidly changing and economically challenging future.

The third goal of my presidency, and in many ways the most enjoyable challenge, was to provide sound and positive leadership for the profession. As we all know, a leader is only as effective as the team that he works with, and without

a doubt, this year's management team and Executive Council were exceptional. I extend my sincere thanks to Drs. Ray Wenn, and Bryun Sigfstead, and my colleagues on Executive Council, Drs. Jim Brookfield, John Diggins, Barry Dolman, Toby Gushue, Dick Sandilands, and Bernie White.

I had the opportunity to spend a lot of time at CDA's headquarters in my home town of Ottawa. There, I worked with CDA's Executive Director, Jardine Neilson, along with our capable and professional staff. As well, all of us owe much to the hundreds of superb volunteers who gave our

association their time, energy, expertise and guidance. I thank you all for allowing CDA to stand proud as "the authoritative national voice, resource and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health care for Canadians."

The issues that confronted the CDA leadership team this year were many. As highlighted in detail in this review, we:

- ◆ developed revised fluoride guidelines to meet the realities of today's multiple sources and reinforce the benefits of its use in oral care prevention;
- ◆ continued to provide infection control guidelines based on current science, commonsense, and protection of our patients, our staff and ourselves;
- ◆ developed a supervision statement that reflects dentistry's principles for optimal oral care by the dental team. Unfortunately, our sister organization, the Canadian Dental Hygienists' Association, did not support this statement;
- ◆ responded to increased public attention on the incidence of dental insurance fraud and voiced our disappointment with those colleagues who cast a shadow on the principles and ethics we hold dear;
- ◆ dealt with a lawsuit brought by the Quebec Dental Surgeons Association over the distribution of the CDIP life plan surplus from dentistry's own insurance and investment program. We expressed our disappointment and sadness at this public dispute within our family while maintaining CDA's position that these monies are best used to further strengthen the already strong plans held for all participants;
- ◆ developed an exciting new practice management program to help not only our newest members during these tough economic and practice times, but to also help our long-standing members identify and make those business decisions necessary for their future success;
- ◆ developed guidelines on the management of hazardous materials in the dental office and continued to develop a practical and easily followed infection control office manual to help implement and monitor those procedures necessary for our patients health, security and safety;
- ◆ saw more and more dentists enjoy the great claims processing service provided

by CDAnet, as well as the participation of Ontario Blue Cross and the federal public service plan, and continued to negotiate with several of the not-for-profit carriers in the West to come on board CDAnet;

- ◆ coped with delays in implementing CDAnet Plus, our value added package for those who subscribe to CDAnet;
- ◆ enjoyed the largest dental meeting ever held in Canada this year, when the Ontario Dental Association acted as host for the CDA Annual Dental Meeting in Toronto;
- ◆ pursued the challenges of organizing and staging a multinational World Dental Congress in October 1994 in Vancouver with the Fédération Dentaire Internationale.

And last but not least, we initiated a special working group on membership concerns to look at where CDA is going in the years ahead, what our policies and priorities should be, and how we can develop a more stable source of funding so that all those who benefit from CDA can contribute equitably.

It's been quite a year and I can truly say that I've enjoyed every minute of it. Not only has it been a year of intense fiscal management and

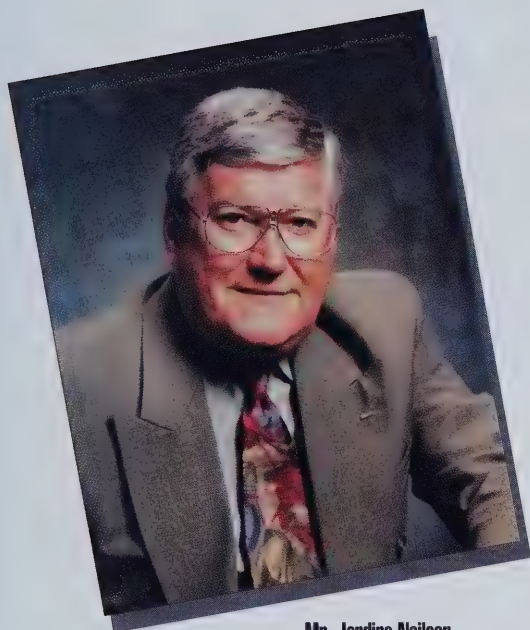
major policy initiatives, but it's also been a year where I've been able to share with you many of my personal views on our profession through my monthly column in the *Journal*. I thank those of you who've taken the time to tell me what you've liked as well as what you've disliked. In this exchange of views, we've both been given food for thought and insights into what lies ahead.

And if, over the past year, I've been able to convince some of the sceptics of our profession that in order to be true professionals and part of a successful profession we must all be part of a collegiality, with a duty to belong to our local, provincial and national dental associations, then I'm encouraged that our profession will have the foundation it needs to prosper in the years ahead.

Thank you, one and all, for allowing me the opportunity to serve my profession in just this way. It's been a wonderful year that I'll never forget.



Bernard Dolansky, BA,
DDS, MS
President of the
Canadian Dental
Association, 1992-93



Mr. Jardine Neilson,
Executive Director



EXECUTIVE DIRECTOR'S MESSAGE

Like all of you reading this Annual Review edition of the CDA Communiqué, I want to believe the economic gurus who have judged the latest recession to be at an end. And again like you, I am troubled by the new '90s phenomenon — the so-called “jobless recovery.” With economic restructuring under way to meet global marketing needs, many Canadians are still losing obsolescent jobs, and the national unemployment rate is hovering at close to 10 per cent. In this context, it's difficult to feel upbeat about the statistical fact that the country has, technically, pulled out of the economic downturn.

Viewed as a microcosm within the Canadian and world scenes, CDA was able to substantially improve its own financial performance during the past year; in our case, we have for some time been involved in what would more aptly be described as a reshaping, rather than a restructuring exercise. CDA operates within a political structure repre-

sented by the Board of Governors, which spawns Executive Council and Management Committee to carry out its business between the interim and annual sessions. Our other councils and committees are structured to pursue particular matters of interest to dentistry, ranging from the scientific through member services to taxation. The

CDA structure serves us well and allows ample flexibility to make adjustments as deemed appropriate.

How we shape our priorities for the management of resources is a function of CDA's multi-year strategic planning process. This process guides the annual fall planning session, when Executive Council and senior staff review the as-

sociation's medium- to long-term framework of mission statement, goals and objectives, and near term budget requirements. So our regular and disciplined reshaping of CDA's operational plan enables us to keep a valid check on association activities, against the realities of both the outside and inside worlds.

This past year saw several new developments in the course of our continuous review process. As part of our commitment to responsible fiscal management, CDA introduced a staff review and attrition policy. As staff members retire or leave CDA to work elsewhere, only those positions that are deemed essential to the continued success and relevance of the association are filled.

This policy was implemented in conjunction with a zero-base review of all existing programs and member services. Each activity was evaluated against CDA's mission statement and goals to determine its worthiness, and budgets were adjusted accordingly. At the same time, any new programs and service proposals were also considered. This process had two objectives: to reduce CDA's annual expenses, and to strengthen the association's mix of programs and services; we wanted to "put our money where the mission is." We are confident that, on both counts, we successfully tackled these two objectives in that strategic context. Following the plan developed as a result of this zero-base review, CDA ended fiscal year 1992 with an operating surplus in excess of \$200,000, which will be applied to debt and mortgage reduction. This bottom line outcome is particularly sat-

isfying given current economic conditions, and it is certainly a result in which every CDA volunteer and staff member can take well-earned pride.

As we move through the '90s, it is not only the old economic order that is changing dramatically. Attitudes and personal lifestyles are also undergoing rapid change. The paradox seems to be that even as national economies are globalizing and markets are expanding outwards, lifestyles and attitudes are becoming more inwardly focused. And this facet of today's reality also calls for response by CDA.

In today's world, there seems to be less and less individual allegiance or loyalty motivation which causes us to join together in professional association. The beneficial relationships that CDA has developed with its corporate members will be particularly significant and valuable in meeting the challenge of this ongoing and growing manifestation of the "me" generation. The future of organized dentistry will depend on the ability to bring new graduates enthusiastically into the fold and to demonstrate continuing relevance and value throughout the professional careers of members. To that end, CDA recently introduced two new practice management programs — *Taking Care of Business* and *The Bridge to*

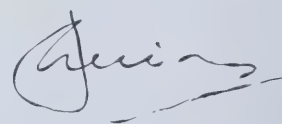
Practice Success. Both programs are innovative, and both demonstrate the value of membership in the national and provincial associations.

CDA's new ad hoc working group on membership concerns will also have an important role to play in reshaping CDA's plans for the '90s and beyond. This group will identify key issues relating to both individual and corporate CDA members, and develop approaches to achieve an equitable allocation of the costs and resources consumed by various CDA activities.

In undertaking all the necessary actions leading up to the year 2000, the most important factor, as always, will be the continued dedication and commitment of CDA's volunteer leaders. CDA would not be in the enviable position it is today without the support and service of its volunteers — the dentists who serve on CDA's committees and councils. These dedicated individuals make a significant commitment to organized dentistry and their profession, and do so at a sizable personal cost. Year after year, they willingly take time away from their practices to attend meetings, sharing their knowledge and expertise with their fellow dentists. They are the people who find the consensus on issues, and frequently serve as spokespersons for the

policies and recommendations that make CDA the effective, national voice that it has become.

In 1992-93, with Drs. Bernard Dolansky, Ray Wenn and Bryun Sigfstead serving on CDA's Management Committee, and Drs. Jim Brookfield, Barry Dolman, John Diggins, Bernie White, Dick Sandilands and Toby Gushue on Executive Council, the association was blessed with particularly sound, effective leadership. Working with these individuals as well as with CDA's talented staff, made this a productive and happy year for me. To all of them, I extend heartfelt appreciation for their efforts and their support.



Jardine Neilson, BA,
MSW, CAE
Executive Director



ADVICE AND INFLUENCE

CDA continued to be an active lobbyist on behalf of the dental profession in 1992-93. The association was also in the spotlight of international dentistry, when representatives from CDA attended the 1992 Fédération Dentaire Internationale (FDI) Congress, held in Berlin, Germany, to inform the world about Canadian dentistry's plans for the 1994 FDI meeting in Vancouver. CDA will play host to the 1994 FDI Congress next October. The event is expected to be the largest dental meeting ever held in Canada.

HIGHLIGHTS

International Dentistry

- ◆ CDA's Executive Director, Jardine Neilson, became the first non-dentist to be elected as the North American regional

representative on the FDI council. Mr. Neilson is currently CDA's national treasurer to FDI.

- ◆ In March, CDA's management committee met with senior officials of the **American Dental Association (ADA)** to discuss matters of mutual concern. Agenda items for the day-long meeting included: the 1994 FDI Congress in Vancouver; the impact of the North American Free Trade Agreement (NAFTA) on dentistry; concerns over



CDA's Management Committee meets with their counterparts from ADA. Left to right: Dr. Jack Harris, ADA President; Dr. Raymond Wenn, CDA President-Elect; Dr. Bernard Dolansky, CDA President; Dr. James Gaines, ADA President-Elect; and Dr. Bryn Sigstead, CDA Vice-President.

the exclusivity of CDA's seal of recognition program; the presentation of ADA programs in Canada and the development of an appropriate protocol for these events; infection control requirements in Canada and the United States; electronic data interchange and CDAnet; and concerns over the environmental impacts of mercury.

- ◆ During 1993, CDA contacted a chief negotiator for the **North American Free Trade Agreement** to determine what impact the impending deal would have on Canadian dentistry. Through these discussions, CDA learned that NAFTA will not have any impact on the authority of either national or provincial licensing bodies. Dentists from Mexico or the United States wishing to practise dentistry in Canada will still have to apply for and obtain a license in this country. However, any licensing requirement based solely on an applicant's nationality or place of residence

will be viewed as discriminatory under NAFTA.

- ◆ In July, CDA joined in convincing the **Academy of General Dentistry** to reconsider a plan that would have dropped the requirement for members of AGD to belong to either CDA or the American Dental Association. AGD was considering the plan as a means of attracting new members. Like many associations, AGD has experienced a decline in membership due to the current economic climate.

Government Relations

- ◆ CDA continued to promote tougher tobacco regulations in 1992-93. Last April, CDA President Dr. Bernard Dolansky wrote to Health and Welfare Canada (renamed Health Canada as of September 1993) urging the government to strengthen the proposed amendments to the **Tobacco Products Control Regulations**, as presented in the *Canada Gazette*, Part I, March



Parliament Hill, the national capital, Ottawa, Ontario

20. An amendment requiring tobacco manufacturers to place stronger, more visible, warnings on tobacco products was approved last summer. In July, Dr. Dolansky thanked Health Minister Mary Collins for her "determination and leadership" on the tobacco issue. CDA continues to support the Canadian Council on Smoking and Health and is a member of the Coalition For Action On Tobacco.

- ◆ In 1992-93, CDA presented its comments and concerns about proposed amendments to the **Lobbyists' Registration Act** to the federal Standing Committee on Consumer and Corporate Affairs. The association is concerned that the government may attempt to recover the cost of maintaining its Lobby Registry by

charging registration fees. This would appear to go against the preamble of the Act, which states that: "free and open access to government is an important matter of public interest" and "a system for the registration of paid lobbyists should not impede free and open access to government." CDA believes that any financial impediment to ongoing communication between the association and the Canadian government would not be in the best interests of either the dentists of Canada or the Canadian public. Furthermore, the association asserts that non-profit organizations, particularly those that are concerned with public health and safety, should not be required to pay any fees to register as Tier II lobbyists.



- ◆ CDA's efforts to make it easier for dentists to act as guarantors on their patients' **passport applications** enjoyed some success in 1992-93. The government is now considering a proposal — developed by a CDA member — that would allow guarantors to confirm their signatures by fax. This would avoid dentists being called away from patients to take phone calls from the passport office, or the need for them to waste pre-

cious practise time returning the call.

Taxation

- ◆ CDA's taxation committee was active in a number of areas, particularly with respect to the **Goods and Services Tax (GST)**. Chaired by Dr. Robert Hicks, the committee is preparing a technical bulletin on the GST as it relates to the sale of a dental practice. It now appears that dentists may be exempt from paying GST on inventory when they purchase a dental practice. The committee has also received an interpretation from Revenue Canada confirming the GST status of

denture liners/reliners and denture adhesives. Denture liners/reliners are now unconditionally zero-rated, while denture adhesives attract GST.

Education

- ◆ At the annual board meeting in September, it was resolved **THAT** the Canadian Dental Association supports the principle that there should be **continuing opportunity for quality undergraduate and post-graduate dental education** for Canadians within Canada. This resolution stemmed from CDA's concern that dental schools, be-

cause of the current economic situation in Canada, have had to justify their continued funding. CDA believes that decisions to close or amalgamate schools should be based on statistical data, and that the profession should have a say in the number of dentists that are trained each year and where that training takes place.



T*o develop positions, policies and programs which will provide optimal, accessible oral health care for Canadians.*



Dr. Donald MacFarlane,
CDAnet Committee Chairman



INNOVATION

It was a year that saw one CDA program take a giant leap forward and one program come to a temporary impasse. The good news comes from the Sydney Wood Bradley Memorial Library, where the acquisition of new CD ROM technology has already started to benefit CDA members. The impasse involves CDAnet's plans to implement value-added services, which were to have been in place by the summer of 1993. Because of various problems outside of CDA's control, the start-up for those services will be pushed back for several months.

Library Enhances MedLine Service

◆ With its recent acquisition of the MEDLINE database on CD ROM (compact disk, read only memory), the CDA Library will be able to provide members with a more efficient, faster, literature search service — at considerably less cost to CDA. In effect, the library can now access the entire MEDLINE database in-house, eliminating the need for library staff to access the main MEDLINE database by modem. Equally important,

the library's CD ROM MEDLINE database is fully updated every three months, just the same as MEDLINE's on-line database.

Using the new system, CDA library staff can provide members with the abstracts of articles referenced in a literature search. This will make it easier for dentists to select the articles that meet their needs, and save them considerable time and effort. The MEDLINE database contains the Index To Dental Literature from 1965 forward, as well as countless references to articles

published in medical and scientific journals.

It is expected that the new system will reduce the library's operating costs by about \$7,000 per year. These funds will be used to acquire new journals, books and videos to further improve the service the library offers to CDA members.

CDAnet

◆ This was the year when CDAnet hoped to introduce its long-awaited line of value-added services — CDAnet Plus — to

Canadian dentists. Unfortunately, the company that CDA was negotiating with to provide these services, VCS Technologies Inc., was sold just months before the scheduled launch of CDAnet Plus. This has delayed CDA's projected start-up date for value-added services.

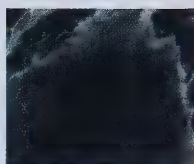
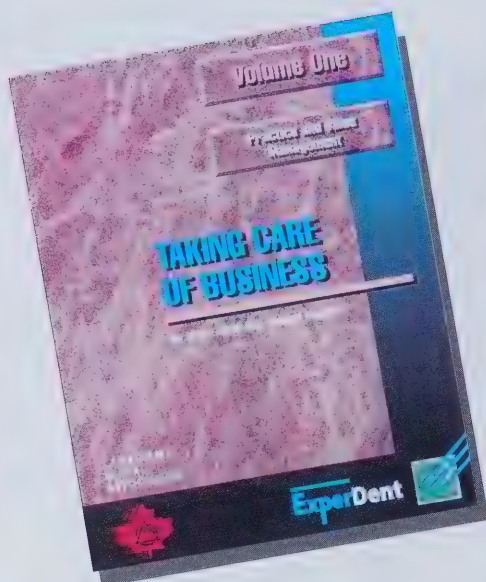
Despite this temporary setback, CDAnet has continued to grow. Today, close to 1,900 dentists from 1,000 offices have joined the system, taking full advantage of the speed and efficiency of paperless claims processing.

The system is also gaining increasing popularity with dental insurance carriers. In March, Ontario Blue Cross, which controls as much as 20 per cent of the province's dental insurance market, began processing claims on CDAnet. Another major breakthrough occurred when dentists were given the go ahead to process claims submitted by federal government employees whose dental plans are administered by Great Western Life Assurance Co.



CDA staff work with the library's new CD ROM system.

T*o develop programs, standards and services at the national level, which will enrich the profession and the personal life and character of its members.*



PROFESSIONAL DEVELOPMENT

If CDA's initiatives in the professional development sphere this year had to be summed up in just one word, that word would be outstanding. In 1992-93, CDA launched three new professional development programs, held its largest ever Annual Dental Meeting, and revitalized the structure of its dental charities. The association also gained recognition for its continuing education programs as well as its monthly journal.

Continuing Education

♦ **Taking Care of Business**, CDA's most ambitious foray into the practice management field to date, is being launched this fall. Designed to provide participating dentists with all the practice management skills they'll ever need, the program is a joint initiative between CDA and ExperDent Consultants. It is intended to help dentists cope with the tough economic

situation that currently prevails in Canada, and to help new graduates make the transition from dental school to dental practice. When it is complete, the program will consist of a series of information-packed books on practice management (two books are complete so far). The program, while still in its infancy, is drawing rave reviews from dentists who have already read the first book.

♦ **The Bridge To Practice Success**, a one-day seminar geared



CDA's 1993 Annual Dental Meeting was a huge success.

toward fourth-year students, was introduced at the University of British Columbia on a pilot basis last fall. Designed to

help students succeed in the difficult, early years of practice, the program was extremely well received. It will be of-

ferred at each of Canada's 10 dental schools in 1993-94.

- ◆ CDA's new and improved **Canadian Dental Consumer** in the '90s seminar went on a five-city tour this year, attracting rave reviews. Made possible through a generous grant from Ash Temple, the seminar addresses the current and future demographic, economic and consumer trends in Canada and, in particular, how they will affect the dental profession. The seminar, given by Mark Sarner of Manifest Communications, was first presented in 1991.

- ◆ CDA's 1993 **Annual Dental Meeting** was historic. Held in Toronto and hosted by the Ontario Dental Association, the three-day event attracted over 9,000 people, including 3,500 dentists. No other CDA dental meeting in history has been so well attended. Many of the participants were attracted to Toronto by the quality of the clinicians and lecturers assembled by Dr. Michel Jahjah, CDA's convention general chairman, for the scientific program. Others may have been attracted by the multitude of exhibits on the exhibition floor. Either way the



Drs. John Robertson, Harry Rosen and Mel Charendoff each received CDA's Distinguished Service Award in 1992-93.

1993 Annual Dental Meeting was a huge success.

- ◆ CDA has signed a four-year agreement with the **Academy of General Dentistry** that will allow dentists participating in CDA-sponsored continuing education courses to earn AGD fellowship or master-ship credits. AGD maintains a National Sponsorship Approval Program to help its 33,000 member dentists identify quality continuing education programs.
- ◆ *The Journal of the Canadian Dental Association* has been added to the list of publications that Ontario dentists can

read to earn continuing education credits. Ontario dentists who read the *Journal* are entitled to receive five credits per year from the Royal College of Dental Surgeons of Ontario, who implemented a system of mandatory continuing education in the province earlier this year. Dentists must now complete 90 credit hours of approved courses over a three-year period.

Dental Volunteers Honored

- ◆ CDA honored a number of individuals in 1992-93 for their past or ongoing work

on behalf of organized dentistry. Drs. Mel Charendoff, John Robertson and Harry Rosen each received the **Distinguished Service Award**, while Drs. Brig.-Gen. J. Fred Begin, Allen MacLean, John E. Speck and Robert S. Turnbull each received the **Award of Merit**. Certificates of merit were awarded to Dr. Micheline Blain, Ms. Carol Clemenhausen, Mr. Cyril Gallant, Dr. William Glave, Dr. Jack Gryfe, Dr. Patricia Johnson, Dr. Kerim Ozcan, Dr. David Precious, Dr. Brian Rocky, Dr. Wayne Steggles and Rev. Rondo Thomas.

◆ CDA has invited Dentsply to co-host its annual CDA Awards Luncheon this year. In the past, Dentsply has hosted a special student clinicians awards dinner in conjunction with the CDA Annual Dental Meeting. The event was held to honor the winners of the student clinician program at Canada's 10 dental schools, and to announce the winners of the CDA/Dentsply Student Clinician Program. This year, however, CDA's Annual Dental Meeting was

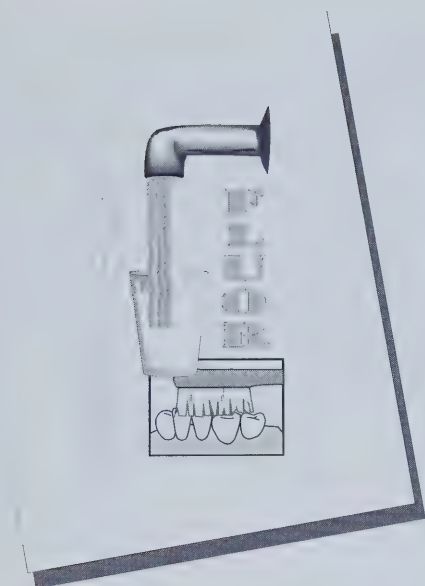
held in May. Because it would have been difficult for the students to prepare and present their clinics in May, Dentsply and CDA agreed that the awards presentation and judging should occur during the 1993 CDA board of governors' meeting in September, in conjunction with CDA's Awards Luncheon. This year's event was called the CDA Awards/Dentsply Student Clinicians' Luncheon.

Dentistry Canada Fund Launched

◆ CDA has created a new umbrella organization to administer its existing dental charities. The mandate of the new organization, called the **Dentistry Canada Fund (DCF)**, is to raise donations in support of dental health from previously untapped sources. In that role, it will administer the fund-raising activities and monetary disbursements of the

Canadian Fund For Dental Education (CFDE), the Grieve Memorial Lecture-ship Fund, the Canadian Dental Research Foundation, the Library Trust Fund and the Canadian Dental Foundation. The unique objectives of these charities will be retained under the new administration, however.

T*o develop programs, standards and services at the national level, which will enrich the profession and the personal life and character of its members.*



PROFESSIONAL STANDARDS

In a year when the media leaped from one dental issue to the next, CDA acted calmly and rationally by endorsing well-conceived, scientifically-based recommendations and policies. The association took a stand on infection control, stating that while the heat sterilization of handpieces was preferred, there was no hard evidence to suggest that high-level disinfection was not a suitable alternative. Dentists were advised to follow CDA's existing Recommendations For Infection Control Procedures.

CDA also responded to renewed public concerns on fluoride in 1992-93, by revising its fluoride policies to reflect the recommendations developed by the 1992 Canadian Conference on the Evaluation of Current Recommendations Concerning Fluoride.

Fluoride Policy Reviewed

- ◆ This year, CDA reaffirmed its support for the fluoridation of municipal water supplies, calling the practice "a safe, eco-

nomical and effective means of preventing dental caries in all age groups." The association also called for the fluoride levels in community water supplies to "be monitored and adjusted to ensure consistency in concentrations and avoid fluctuations." A revised CDA fluoride policy, approved by the Board of Governors in May, states that children under three years of age should not receive any fluoride supplement. Children of three years of age and over should only be ad-

ministered fluoride supplements if the fluoride level in their community water supply is under 0.3 milligrams per litre.

Infection Control

- ◆ CDA's planned *Infection Control Guide* is currently in the final review stage. Designed in a logbook format, it is intended to complement CDA's *Recommendations for Infection Control Procedures*. The guide, due to be released next year, will provide dentists

with step-by-step infection control procedures, as well as informing them on the active ingredients to look for in various dental products, such as hand soap and disinfectant.

Supervision of Dental Hygienists

- ◆ CDA and the Canadian Dental Hygienists' Association (CDHA) were unable to reach agreement on a joint statement on the supervision of dental hygienists' in

1992-93. Therefore, each association has released its own statement. In a special President's Letter to CDA members, Dr. Bernard Dolansky stated that CDA could not support CDHA's statement, because it failed to recognize the unique role of the dentist, and went against the concept of a "dental team" approach for the provision of dental care. CDA's position is that only dentists have the training and expertise required to undertake differential diagnosis and treatment planning.



Seal of Recognition

- ◆ CDA approved an application from Warner Lambert to have Trident Sugarless Gum qualify for recognition under the association's Seal of Recognition Program. Trident is the first chewing gum to be recognized by CDA. To qualify for recognition under the Seal of Recognition Program, the manufac-

turers of chewing gum must demonstrate that their product does not contribute to dental caries, and that it has been granted a DIN or GP number by the Health Protection Branch of Health and Welfare Canada.

Tooth Whiteners

- ◆ Members of CDA's Consumer Products Recognition Committee continued to meet with officials from Health and Welfare Canada this year to reiterate CDA's concerns with regard to the effects of tooth whiteners on tooth structure. CDA believes that the sale of over-the-counter



Dr. Michael Eggert,
Consumer Products Recognition Committee
Chairman.

tooth whiteners should be regulated.

USCLS

- ◆ After discussion with provincial committees and specialty committees, CDA has established new

guidelines for revisions or changes to the **Uniform System of Codes and List of Services (USCLS)**. Requests for new codes or code revisions are accepted from CDA's third party committee, the corporate bodies and national specialty organizations recognized by CDA. In all cases, requests must be approved by the CDA board of governors.

To develop positions, policies and programs which will provide optimal, accessible oral health care for Canadians.



COMMUNICATIONS

In 1992-93, a year when the news media seemed intent on heightening public concerns over AIDS, fluoride and infection control, CDA played a key issue management role. Through a series of special President's Letters, the association alerted its members to upcoming television broadcasts and provided relevant, factual information on the issues of the day. Association spokespeople counteracted media hype with calm, scientifically-based answers, clearly stating CDA's positions and policies. And CDA's information officer was there to answer questions and direct callers to the appropriate CDA spokesperson.

CDA's 1992-93 communications initiatives didn't stop with issue management, however. The association also participated in an exciting new program to demonstrate the beneficial effects of fluoride to children, redesigned both *Communiqué* and the *Journal*, enhanced its Dental Information System and participated in a campaign to promote the use of bicycle helmets and mouth guards. Many CDA dental awareness projects are undertaken with support from corporate sponsors. In fact, since CDA's Dental Awareness

Program began in 1984, the association has raised over \$5 million in support of its dental awareness activities.

President's Letters

- ◆ Five President's Letters were sent to CDA members in 1992-93. CDA President Dr. Bernard Dolansky used the letters to communicate with member dentists on a wide range of issues, including: CDA's policy on fluoride and the impending

broadcast of a CBC *Marketplace* story on fluoride use in dentistry; CDA's belief in a Canada that includes Quebec; CDA's concerns over a statement on the management of dental hygiene care (released by the Canadian Dental Hygienists' Association); the impending broadcast of a CBC *Prime Time News* story on insurance fraud; and concerns over the prevalence of Hepatitis C in the dental office. President's Letters ensure that CDA members

are informed quickly and factually about fast-breaking news and issues.

Journal and Communiqué

- ◆ Both *Communiqué* and the *Journal* were given a new look and a new format in 1992-93. Introduced in March, the redesigned *Journal* features a new typeface and a new emphasis on eye-catching graphics. The idea was to bring the magazine into the

'90s and make it more visually appealing. However, the *Journal* will continue to publish its unique mix of scientific, clinical, practice management and high-tech articles, and serve as CDA's communications link to the dental profession as a whole.

- ◆ March was also the month when CDA members received their first copy of the association's new and improved *Communiqué*. The newsletter has been totally revamped, from its new emphasis on practical dentistry to its 16-page, four-color format. To be published five times a year, *Communiqué* will now carry articles on issues of particular importance to the dental practitioner, including wrongful dismissal, investment opportunities, and clinical techniques. It will also give more emphasis to general news stories and to profiling the people behind the news. The intent is to make *Communiqué* one of the outstanding benefits of membership in CDA.
- ◆ Despite the tough economic times, and the costs associated with its redesign, the *Journal* succeeded in turning its fiscal position around by achieving a small

surplus of revenues over production costs in 1992-93. In fact, the redesign of both the magazine and newsletter was done internally, which created significant cost savings for the association.

Annual Review

- ◆ Now in its fifth year of publication, the *Annual Review* provides CDA members with a record of the activities that the association has undertaken on their behalf in any given year. Published as a special edition of *Communiqué*, the 1992-93 *Annual Review* was designed and produced by CDA staff.

Dental Health Promotion

- ◆ CDA went back to the basics with its "Egg Speriment" program this year. Designed in a show-and-tell format for school children, and sponsored by Procter and Gamble, the program's intent was to teach children about fluoride and how it protects their teeth from decay. Grade school teachers across Canada were sent instructions on how to perform the "Egg Speriment" in their class rooms. It

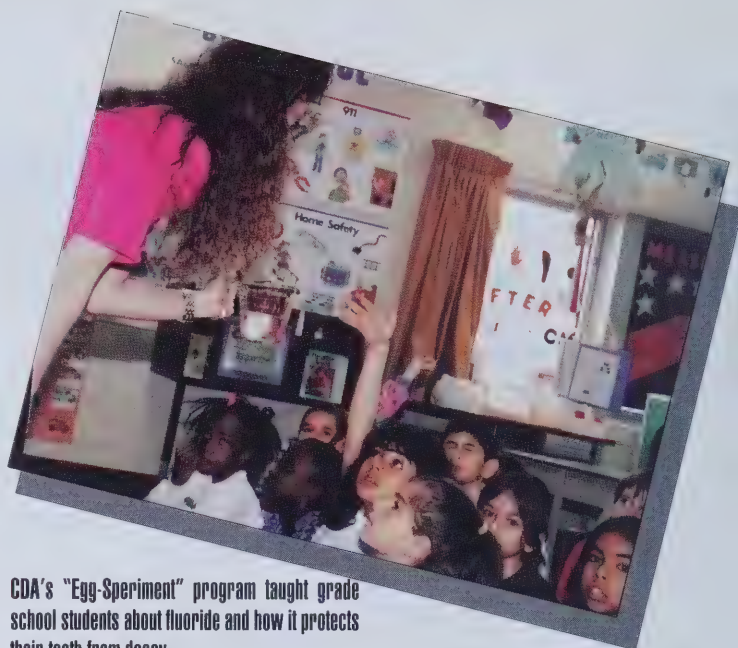
CDA's "Egg-Speriment" program taught grade school students about fluoride and how it protects their teeth from decay.

involved covering one side of an egg with fluoride toothpaste and then immersing the egg in a weak acid solution for several hours. When the egg was taken out of the solution and rinsed, the side that had been covered in toothpaste was strong and hard, but the unprotected side was soft and weak. The program was introduced in April, Dental Health Month, and was complemented by a series of television ads placed by Procter and Gamble. The "Egg Speriment" package also included a "Bob" poster for children to color, a copy of CDA's five-point prevention plan and a dental health poem.

- ◆ CDA's Dental Information System program was a smash hit with both dentists and patients this year. Nearly 500,000

DIS information booklets were distributed to dental offices across Canada. Designed to educate and inform the public about all aspects of dentistry — from orthodontics to prevention — the color booklets were developed and released in 1991. To date eight booklets are available, but six complementary, one-subject pamphlets are currently under development and should be ready for distribution by 1994. The new pamphlets will cover: cosmetic dentistry, orthodontics, care after minor oral surgery, root canals, TMJ, and crowns and bridges. CDA's DIS program is sponsored by Colgate Palmolive.

- ◆ CDA's new patient-education audio cassette, *Keep Smiling*, was released in 1992-93 to promote the association's five-



point prevention plan. The 15-minute tape features a conversation between a dental patient and a dental hygienist. Sponsored by 3M Canada, it is available through CDA's merchandising program.

- ◆ CDA branched into the sports safety field in 1992-93 when it participated in a joint program with Sandoz Canada to promote the use of mouth guards and bicycle helmets among children. The program involved sending every CDA member a package of patient-education pamphlets and a convenient display rack. Developed by Sandoz, the pamphlets encouraged parents to protect their families from head and mouth injuries by requiring children to wear a bicycle helmet while cycling. It also promoted the use of mouth guards for other sporting activities. A similar program was carried out by the Canadian Medical Association.

counterparts to share information on planned program activities as well as current initiatives. In recent years, there has been a remarkable increase in dental awareness programs at the provincial level. CDA has therefore focused its own dental awareness efforts on national initiatives, but still provides support to the provinces, as needed.

The annual provincial communications coordinators' meeting helps to prevent overlap between national and provincial programs. Held in Toronto in conjunction with CDA's Annual Dental Meeting, the 1993 communications coordinators' meeting prompted discussions on a wide range of dental awareness activities, including: TV advertising campaigns, issue identification and management, media relations, the

development of coordinated press releases, and the promotion of CDAnet.

Spreading the Word

- ◆ CDA, as the authoritative national voice, resource and focus of unity for the profession of dentistry in Canada, communicates with three main publics: its members, nonmember dentists and the public at large. In each case, CDA's communications activities are geared specifically toward the particular public that the association wants to reach. However, there are occasionally individuals who slip through the cracks. For example, many provincial licensing boards now include individuals who are non-dentists. As such, these people may not be

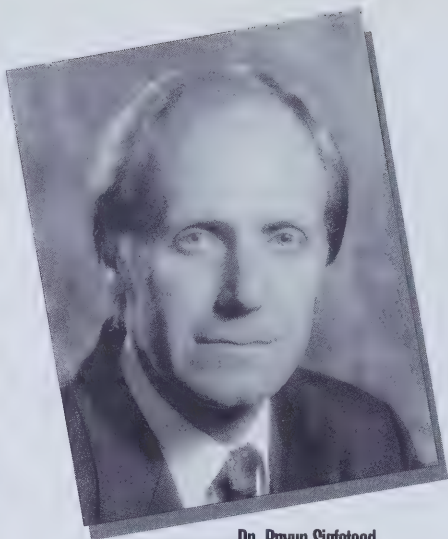
aware of CDA's activities on behalf of the profession and the Canadian public. CDA has therefore sent each of them an orientation package and will ensure that they receive additional information from the association on a regular basis.

- ◆ CDA responded to 225 requests for information per week this year, on average. The association's information officer fielded calls from the general public on a daily basis. The majority of these inquiries were related to increasing public concern about infection control procedures in the dental office. In addition, the CDA Library responded to countless requests from members for literature searches, as well as acting as an effective information and policy source for the dentists of Canada.

Meeting With Provincial Communications Coordinators

- ◆ For the past three years, CDA's communications' staff have held an informal annual meeting with their provincial

T*o develop and maintain an effective national communication strategy and programs to communicate with CDA publics and stakeholders on all matters under the mandate of CDA.*



Dr. Bryun Sigstead
Chairman of ad hoc Committee
on Membership Concerns



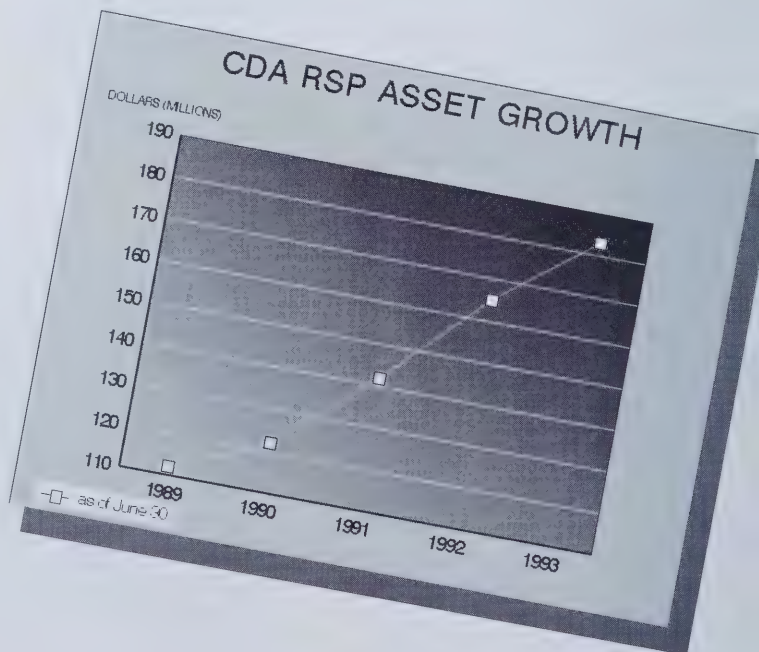
MEMBERSHIP

CDA developed a wide range of new products and benefits for its members in 1992-93. These included two new seminars, *The Bridge To Practice Success* and *Taking Care of Business*, as well as an updated version of CDA's *Canadian Dental Consumer* in the '90s seminar (information on all three seminars appears on page 14). In addition, the association is reviewing the proposed text of a new *Infection Control Guide*, which is due to be released next year (see page 17). Another new program on the horizon is the **CDA Registered Retirement Income Fund or RRIF**. To be offered in the fall of 1993, the CDA RRIF will only be available to dentists who are currently participants in the CDA RSP or who have been members of CDA for the last five years. Dentists who are not CDA RSP participants nor members of CDA will be allowed to participate in the CDA RRIF provided they join CDA by March 1, 1994, and agree to pay membership fees in arrears. More information on CDA RRIF eligibility will be available soon.

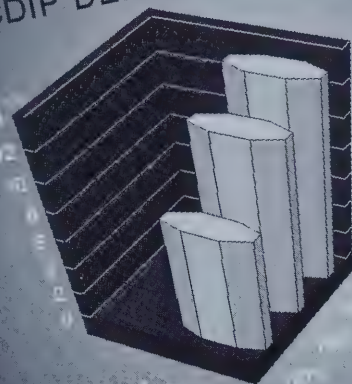
CDA's newest membership benefit is a magazine subscription service. Through Presse Commerce, CDA is now offering its members reduced subscription prices on four collections of magazines. The idea is to make it easy and affordable for dentists to keep current, interesting reading material in their reception area.

Dollars and Sense

- ◆ CDA's council on insurance and investment, Canadian Dental Service Plans Inc. (CDSPI), enjoyed an exciting and highly productive year in



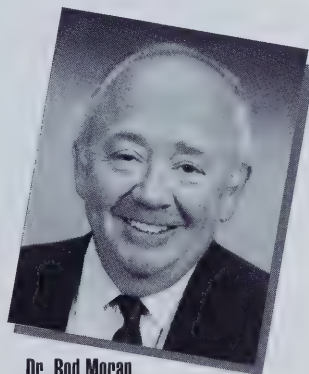
CDIP DENTIST PARTICIPANTS



1992-93, with the total plan assets in CDA's highly successful RSP program growing from \$168 million in July 1992 to \$182 million by June 1993. This growth was spurred on by the continued strong performance of the various funds that make up CDA's RSP program. Of note, the compound rate of return for the Common Stock Fund topped 23 per cent, and the Bond and Mortgage Fund ranked impressively in the Financial Post's 100 top-performing funds for five-year growth.

On behalf of CDA, CDSPI investigated a number of new investment opportunities this year. These included an investment fund to provide dentists with the option of investing in highly attractive — but higher risk — investments. CDSPI be-

lieves that this type of fund could complement the existing funds in the CDA RSP, which are more conservatively managed. The council also researched and developed a new



Dr. Rod Moran
Chairman of CDA's
Council on Insurance
and Investment

RRIF product. That fund, due to become available this fall, will offer exceptional investment convenience and security to retiring dentists. Both funds are intended to improve the services that CDA

offers to dentists through CDSPI.

- ◆ The Canadian Dentists' Insurance Program, administered for CDA and nine of the 10 provincial dental associations by CDSPI, enjoyed a year of stability and development in 1992-93. The program, which offers 14 insurance plans to Canadian dentists, including life, disability, office and liability coverage, was enhanced by the addition of TripleGuard this year. Introduced in January, TripleGuard is a comprehensive office insurance plan that offers dentists all the benefits of CDIP's office contents, practice interruption and comprehensive general liability plans, but at a lower price. To date, the new plan has been very well received.

In the fall of 1992, the CDIP long-term disability plan was enhanced by the addition of HIV coverage (at no additional cost to plan participants), as well as by deferred income tax expense and retirement protection options, which are both available for additional premiums.

CDA has retained the Guardian Insurance Company of Canada as the carrier for CDIP's general insur-

ance plans in 1994. There will be a small increase in the premiums charged for these plans next year. Also, the Prudential Group Assurance Company of England (Canada) has been retained as the carrier for CDIP's life and disability plans in 1994. There will be **no premium increase** for these plans next year.

Recruitment and Funding

- ◆ In 1992-93, CDA established a special ad hoc committee on membership concerns. The new group met for the first time May 21 to develop recommendations that "will result in a greater sense of fairness in apportioning the financial cost of the many programs and services which CDA provides." Specifically, its mandate is to:

1. Review and assess the membership status in each province, and the relationship of the provincial association to government and to the CDA;
2. Develop plans and strategies for those prov-

inces that are currently mandatory to remain mandatory;

3. Develop plans and strategies for those provinces that are mandatory, should that status become threatened;

4. Explore how those provinces that are voluntary can become mandatory in their requirement for CDA membership;

5. Review CDA's fee structure for individual dentists, corporate members and licensing bodies, and explore ways for CDA to broaden its financial base.

Voluntary membership on an individual by individual basis currently exists in only two provinces, Quebec and Ontario. In the other eight provinces, the decision to join CDA is made on a group basis. CDA receives membership fees from 70 per cent of Canadian dentists. It is interesting to

note that if every dentist in Canada belonged to the association, the annual membership fee could be reduced by \$100 without affecting the level of service that CDA provides.

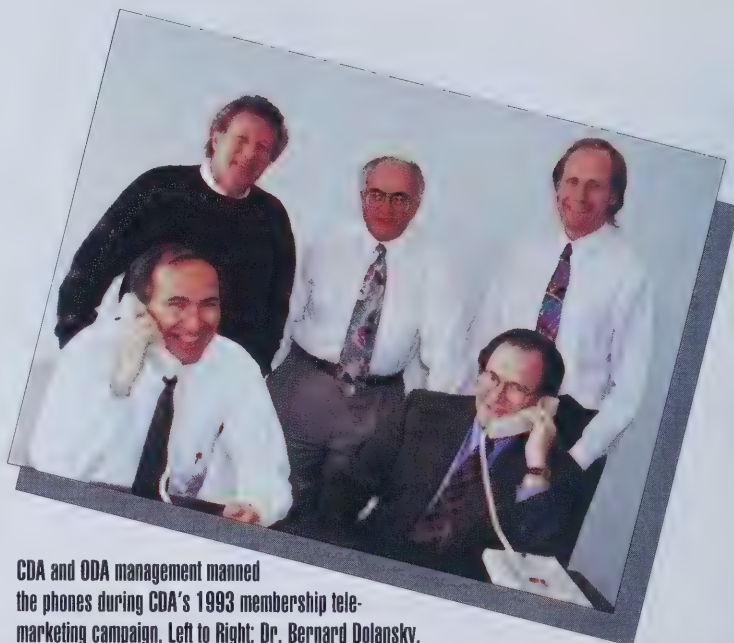
◆ CDA's second annual membership tele-marketing campaign was very successful this year. Both staff and management participated in the campaign, which concentrated on recruiting dentists in the voluntary provinces, but with special emphasis on Ontario. By year's end, it is anticipated that a significant number of new members from Ontario will have joined CDA.

This year, CDA will also implement a new four-year student membership package. The package, available at a reasonable cost to first-year dental students, includes mem-

bership in CDA for their entire undergraduate program, with all the benefits of membership. Developed by CDA's committee on student affairs, the package is intended to introduce dentistry's future leaders to their national association as early as possible, and to ensure that they receive all the benefits that CDA has to offer its student members.

Membership Advantages

One of the most important advantages of CDA membership is value for the money. This year, the association accented that advantage by substantially increasing the price charged to nonmembers for CDA programs and services. In addition, some programs and services are no longer available to nonmembers. The change reflects CDA's dedication to meeting the needs of



CDA and ODA management manned the phones during CDA's 1993 membership tele-marketing campaign. Left to Right: Dr. Bernard Dolansky, CDA President; Dr. David Somer, ODA Past-President; Dr. Raymond Wenn, CDA President-Elect; Dr. Peter Fendrich, ODA President; and Dr. Bryn Sigstead, CDA Vice-President.



Dentists from across Canada attended the scientific sessions offered during CDA's 1993 Annual Dental Meeting.

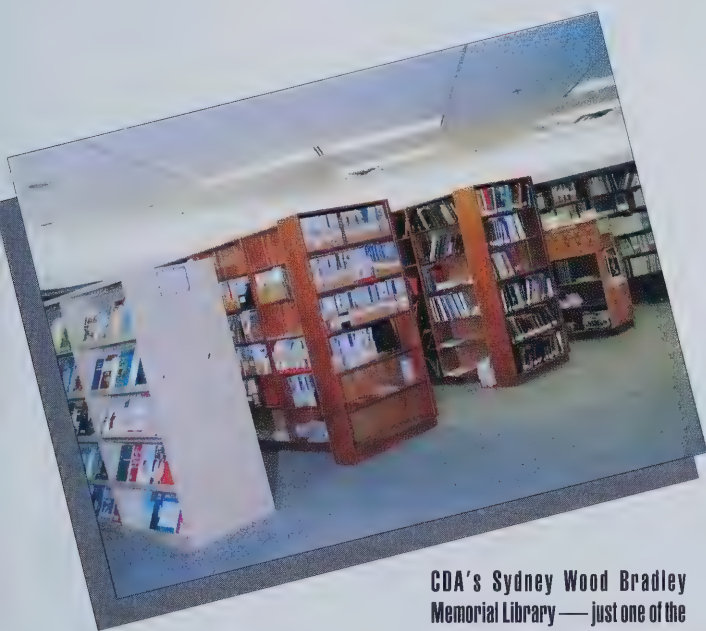
its members, as noted in the association's updated mission statement.

In 1992-93, the advantages of membership included:

- ◆ CDA's *Member Services Guide*, a complete list of CDA programs and services. Updated annually, its distributed to members free of charge.
- ◆ Free admission to CDA's **Annual Dental Meeting**, including most scientific,
- ◆ Substantial savings on CDA's new practice management program, *Taking Care of Business*, as well as on its new and improved *Canadian Dental Consumer of the '90s* seminar.
- ◆ Preferred access to CDA's new **Registered Retirement Income Fund (RRIF)**.
- ◆ No charge electronic

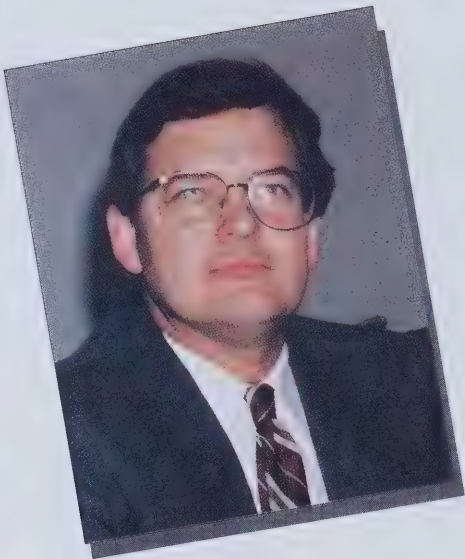
claims processing through CDAnet.

- ◆ Free access to the **Sydney Wood Bradley Memorial Library's** collection of books, videos and journals — plus free MEDLINE literature searches, and great savings on library packages or photocopies of journal articles.
- ◆ Great deals on new cars through CDA Leasing.
- ◆ Discounted rates on daily, weekly and monthly car rentals through Avis.
- ◆ Special corporate rates at major hotels across Canada.
- ◆ A five-per-cent discount from Marlin Travel on selected vacation packages.
- ◆ Super discounts on CDA's hazardous waste manual, *Management of Hazardous Wastes in the Dental Office*.
- ◆ Great discounts on magazine subscriptions from Presse Commerce.
- ◆ Inexpensive, convenient payroll processing through the TD Bank's Phone 'N Pay service.
- ◆ Easy, affordable access to the University of British Columbia's **sterilizer monitoring service**.
- ◆ Low, low prices on a full line of dental health awareness products, including the **Dental Information System**, First Teeth, and Bob and the five-point prevention plan.
- ◆ Members-only out of country continuing education programs.
- ◆ Informative publications and up to the minute President's Letters, including CDA's members only *Communiqué* and the Grad Pack.



CDA's Sydney Wood Bradley Memorial Library — just one of the many advantages enjoyed by CDA members.

To develop programs, standards and services at the national level, which will enrich the profession and the personal life and character of its members.



Mr. Joel Neal
CDA's Director of
Administration



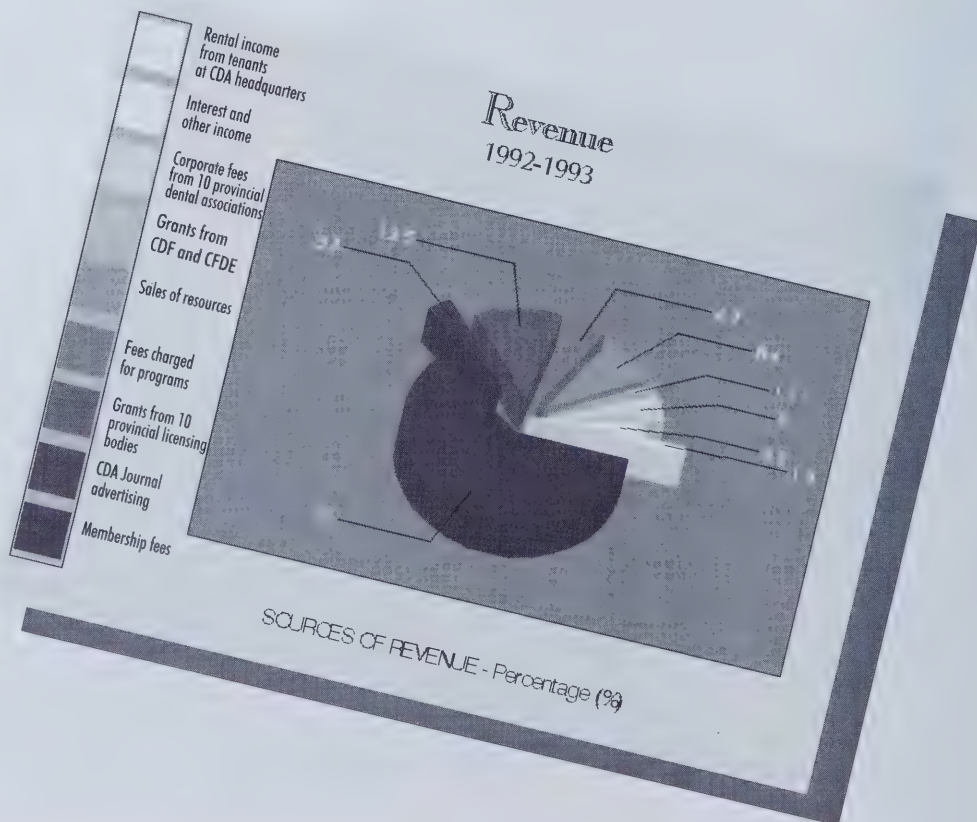
THE BOTTOM LINE

The message was clear. After two years of sizable budget deficits, CDA's elected leaders, corporate members and staff all knew that the association had to turn things around in 1992. In effect, CDA would have to pare expenses, increase non-dues revenue, and control capital spending to achieve a balanced budget.

The strategy worked. By running a very lean ship, CDA generated a surplus of over \$200,000 in fiscal year 1992 and is poised to achieve another surplus in 1993.

Given the relatively stable fixed costs of operating an organization like CDA, financial stability depends on reliable sources of revenue and careful cost containment. In both 1990 and 1991, CDA suffered from an unexpected decline in revenue as well as a number of extraordinary expenses. Budget deficits occurred despite sound management practices and strong fiscal controls.

Early in 1992 it became obvious that more



Expenses 1992-1993

CDA Journal
and Communiqué

CDA Staff

CDA's Board
of Governors

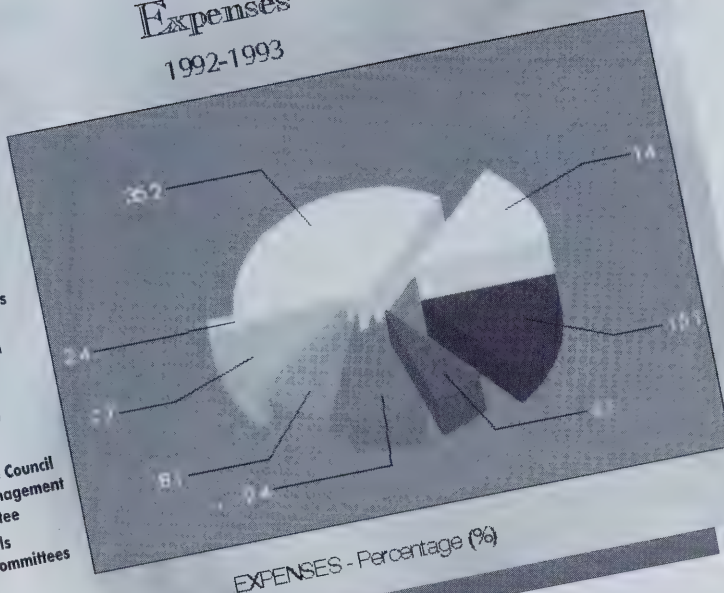
CDA
Headquarters

Information
Services

Operating
Expenses

Executive Council
and Management
Committee

Councils
and Committees



EXPENSES - Percentage (%)

drastic action was called for. The first step was to implement a staff attrition policy. Under this policy, vacant positions were filled only if they were critical to the well-being of the association. Equally important, essential positions were filled by internal candidates unless no qualified staff person was available. Fortunately, staff were able to take on the extra workload

resulting from the implementation of the attrition program, and it did not result in any cuts to CDA's services or programs.

CDA's 1992 budget came under additional scrutiny during the annual fall planning session, when executive council evaluated every CDA program and service against the association's revamped mission statement and goals.

This process led to further spending cuts, as well as to the addition of some new programs. The net result, however, was a sizable reduction in operating costs.

CDA has always been and will remain a lean organization. Over 61 per cent of CDA's revenue comes from membership dues, and 40 per cent of those dues come from dentists in the association's two volun-

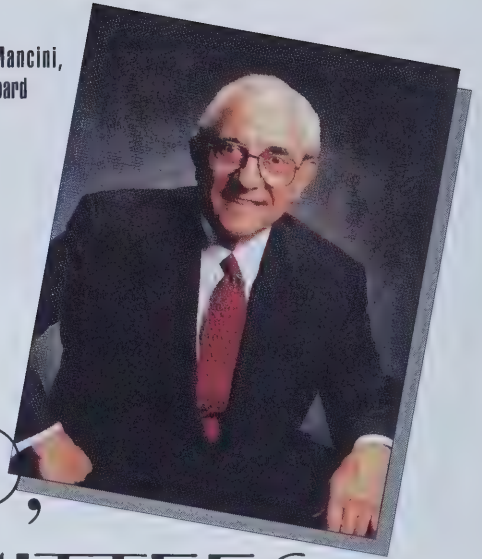
tary provinces — Quebec and Ontario. CDA must continue to sell nonmember dentists on the advantages of membership in their national association, while continuing to meet the needs of its member dentists across Canada.

Membership is the lifeblood of CDA. The association's future depends on the support of its existing members and future members, as well as on increasing its revenue from non-dues sources, and particularly from nonmember dentists.

CDA's fiscal objective for the next five years is to cut its long-term debt in half. To do this, the association will have to maintain the momentum it achieved in 1992. The message is still clear, and CDA will continue to pare expenses, increase non-dues revenue and control capital spending. But above all, the association will continue to meet the needs of its members.

T*o ensure that the association has the necessary resources to effectively manage all programs necessary to fulfil its mandate.*

Dr. Nickolas Mancini,
Chairman of the Board



BOARD, COMMITTEES, COMMISSION AND COUNCILS



CDA's Executive Council. Left to Right: Dr. Toby Gushue, Dr. Barry Dolman, Dr. Ray Wenn, Dr. James Brookfield, Dr. Bernard Dolansky, Dr. Bernie White, Dr. Bryun Sigststead, Dr. Richard Sandilands, Mr. Jardine Neilson, and Dr. John Diggins

It was a year of growth and change for CDA's board, councils and committees. In 1992-93, CDA established a new national forum to improve and promote communication with the national specialty organizations. The association also changed its focus with regards to professional resource utilization, and approved a restructuring of its Student Affairs Committee. These changes reflect CDA's ongoing commitment to strategic planning. Each fall, Executive Council and senior staff meet for a two-day planning retreat to map out the future course of the association. At this year's planning session, CDA's programs and services were evaluated against the association's mission statement and objectives. The intent was to ensure that CDA's programs and services are cost effective, balance the 1992 and '93 budgets, and, in particular, confirm that the association continues to meet the needs of its members. CDA emerged from the process strong and vital. The association is well positioned to face the remaining challenges of the '90s, and ready to enter the 21st century.

National Forum Created To Improve Communications With Specialty Organizations

◆ In 1992-93, CDA perceived a need to improve communications between the association and national specialty groups at the decision-making level. CDA therefore proposed replacing the Dental Specialties Committee with a meeting between the leaders of the specialty organizations and its Management Committee. This proposal was forwarded to the specialty organizations for comment. Consensus on the proposal was subsequently obtained at a special meeting between the specialty groups and CDA's Management Committee, and it was implemented by the CDA Board of Governors. Meetings will now be held at least annually or when either CDA or the specialty groups identify issues that warrant discussion. CDA will pay all costs associated with administering these meetings, provide the venue, and pay the travel costs of its representatives.

Professional Resource Utilization

◆ For a variety of reasons, CDA changed its focus in the professional resource utilization area this year. CDA's new direction is based on the association's belief that its Professional Resource Utilization Committee (PRUC) has fulfilled its initial mandate, and the fact that no external funding has become available to pursue in-house research activities on dental manpower. (CDA's mandate does not include the provision of funding for basic research.) CDA has therefore disbanded PRUC, but will continue to support the National Dental Epidemiological Project. Future CDA activities in the professional resource utilization area will concentrate on encour-

aging research and monitoring its conclusions. This work will now be handled by the Committee on Community and Institutional Dentistry.

Committee On Student Affairs Restructured

◆ In an effort to improve student membership in CDA, and retain new graduates as members, CDA has restructured its Committee on Student Affairs. The new format will allow more continuity on the committee, as more students will now participate in committee meetings in both their second and fourth years. Ten second-year students (guided by two third-year and two fourth-year students) will now attend the committee's spring meeting, which will be used to make them more aware of the benefits of CDA

membership and inform them about all aspects of organized dentistry. They will also be given the tools they need to launch CDA's fall student membership campaign. The same 10 students will attend the committee's fall meeting in their fourth year. At this meeting, they will be informed about what CDA has to offer new grads and the value of membership in CDA will be reinforced. The new structure will be initiated this fall, when senior CDA student representatives are invited to CDA headquarters to preview the programs, services and benefits that CDA offers to new graduates.

T*o provide a national forum which facilitates the exchange of ideas on, and the development of, unified positions and standards on issues of interest to dentistry.*

BOARD, COMMITTEES, COMMISSION, COUNCILS AND STAFF

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CDA/ADC



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of the CANADIAN DENTAL ASSOCIATION / de L'ASSOCIATION DENTAIRE CANADIENNE

Vol. 59 No. 11

November
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CANADIENNE

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The Canadian Dental Association is the authoritative national voice, resource, and focus of unity for the profession of dentistry in Canada — dedicated to meeting member needs, and the promotion and provision of optimal oral health for Canadians.

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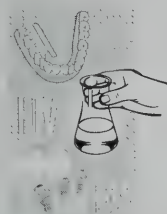
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JOURNAL

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Vol. 59 No. 11

FEATURE



SCIENTIFIC

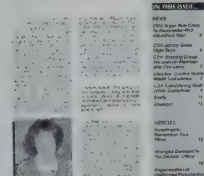


LETTERS



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CDA Launches
Innovative Practice
Management
Program: Taking Care
of Business



Look for your next issue of
Communiqué with the January
issue of the Journal.

Specialty Features

905

Lloyd Bowen — "The Father Of Fluoride In Canada" — Turns 90

P. Ralph Crawford, BA, DMD

907

50 Years Ago — Rescue On The High Seas: The Story of Number 8 Dental Company

M.J.T. Dohan, CD, B.Sc., DDS

909

Child Abuse: Implications for the Dental Health Professional

Patricia Sibbald, MSW

Clive S. Friedman, BDS

915

Elder Abuse and Neglect: A Concern For the Dental Profession

Elizabeth Podnieks, RN, B.Sc.N., MES

921

Elder Abuse and the Dentists' Awareness and Knowledge Of the Problem — A National Survey

Lauren Mayer, BA, BRS

Douglas Galan, DMD, M.Sc.

Scientific

929

The Glandular Odontogenic Cyst, A Rare Lesion That Tends To Recur

David G. Gardner, DDS, MSD

Rénald Morency, MD, FRCP(C)

931

Osteosarcoma and Fibrous Dysplasia: Radiographic Features In the Differential Diagnosis: A Case Report

R.N. Bohay, DMD, MRCD(C)

T. Daley, DDS, M.Sc., FRCD(C)

935

Errors In the Diagnosis Of Oral Malignancies

John G.L. Lovas, DDS, M.Sc., FRCD(C)

Tom D. Daley, DDS, M.Sc., FRCD(C)

George E. Kaugars, DDS et al.

Departments

870

Announcements

873

Editorial

875

President's Column

876

Letters to the Editor

877

News Update

893

Practice Management & Success

899

Let's Talk

902

Library

904

Book Reviews

934

Advertisers' Index

939

CDA Access Ads

944

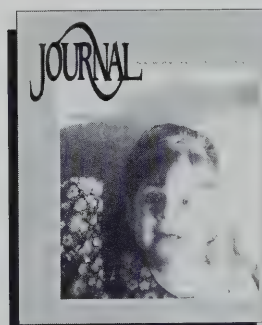
CDA Dental Meeting

947

It's My Opinion

950

Guest Editorial



Cover: Family Violence — Our Shame.

Photograph courtesy of Dr. Walter A. Pellach, Toronto, Ontario.

JOURNAL

November/
Novembre
1993
Vol. 59
No. 11

ANNOUNCEMENTS

NATIONAL HIGHLIGHTS

May 12-14, 1994
Newfoundland Dental Association
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October 2-8, 1994
Joint CDA/FDI
Annual Dental Meeting
Vancouver, B.C.
 (613) 523-1770,
 or 1-800-267-6354

January/Janvier 1994

January 7-9: Academy of Dentistry International, in collaboration with the **Vietnamese Odonto-Stomatological Association** will host the 1st International Dental Congress and Expodent 1994 in Ho Chi Minh City, Vietnam. For details, contact: Pac-West (S) DTE Ltd. 1 Selegie Road, 04-05 Paradiz Centre, Singapore 0718, Republic of Singapore.

January 20-23: 19th Yankee Dental Congress (Massachusetts Dental Society) at Boston's Hynes Convention Center. For information, contact: Dr. Ann Kirk, General Chair, Massachusetts Dental Society, 83 Speen St., Natick, Massachusetts, 01760-7511. Tel: (508) 651-7511.

January 27-29: Miami Winter Meeting organized by the East Coast District Dental Society, at the Hyatt Regency Miami in Miami, Florida. For information, contact: East Coast District Dental Society, 420 South Dixie Hwy, Suite 2E, Coral Gables, Florida, 33146. Tel: (305) 667-3647.

January 29-February 5: 32nd International Alpine Dental Conference being held at the Hotel Annapurna, Courchevel, France. For details, contact: International Dental Foundation, 53 Sloane St., London, England, SW1X 9SW.

February/Février 1994

February 3-5: 2nd Catalan Congress on Odontostomatology/Dentalmat 94 at the Palacio de Congresos de Barcelona in Spain. For details, contact: The Official Association of Odontologist and Stomatologist of Catalina, Central Office, Via Laietana, 30, 4F, 08003, Barcelona, Spain.

February 10-12: International Dental Conference 1994, organized by the Dental Association of Malta at the New Dolmen Hotel, Malta. For information, contact: Malta University Services Ltd., University of Malta, Msida MSD 06, Malta.

February 16-20: Jamaica Dental Association 30th National Dental Convention at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, P.O. Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

March/Mars 1994

March 3-5: Academy of Osseointegration Ninth Annual Meeting in Orlando, Florida. For information, contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Illinois, 60611-4267.

March 19-26: 33rd International Alpine Dental Conference being held at the Hotel Annapurna, Courchevel, France. For details, contact: International Dental Foundation, 53 Sloane St., London, England SW1X 9SW.

April/Avril 1994

April 8-9: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ontario. For details, contact: Dr. Jeff Berger (519) 258-2632, or fax: (519) 258-2637.

April 27-May 1: 51st Annual Session of the American Association of En-

dodontist (AAE) at the Hilton Hawaiian Village in Honolulu, Hawaii. To register, contact: American Association of Endodontists, Annual Session Registration, 211 E. Chicago Avenue, Chicago, Illinois, 60611-2691. Tel: (312) 266-7255.

May/Mai 1994

May 22-28: International College of Dentists Annual Meeting-European Section at the Jerusalem Hilton Hotel in Jerusalem. For details, contact: Dr. S. Sussman, Secretariat, ICD European Section, P.O. Box 50006, Tel Aviv 61500, Israel.

June/Juin 1994

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046. La Habana, Cuba.

June 20-26: Expodental 94 - Turkish Dental Association Second International Dental Congress in Istanbul, Turkey. For information, contact: Istanbul Chamber of Dentists, Mesrutiyet Cad. 182/7 Sishane, Istanbul, Turkey.

June 25-July 1: 10th Congress of the International Association of Dentomaxillo-Facial Radiology in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMF, c/o Korea Convention Services Ltd. SL Youngdong, P.O. Box 305, Seoul 135-603, Korea.

September/Septembre 1994

September 14-18: 17th Biennial Conference of the New Zealand Dental Association in Christchurch, New Zealand. For information, contact: N.Z.D.A. Biennial Conference Committee, P.O. Box 1183, Christchurch, New Zealand.

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*Leinfelder, K.:
Clinical evaluation of Charisma -
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The Kulzer Communicator, Spezial Update Issue,
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EDITORIAL

VIOLENCE — OUR SHAME



Dr. P. Ralph Crawford,
Editor

In its 59 years of publication, the Journal has never fully explored an issue that affects all Canadians — Family Violence. As dentists, we've been aware of the problem, and most of us have treated its victims. But, like the Journal, we've been silent. And that's a shame. It's a shame that we've waited 59 years to speak out, that an evil element of man's inhumanity to man was purposely hidden. And it's a shame that ever since the first primordial human achieved the miracle of reason — the ability to choose right from wrong — mankind has known violence.

In today's world, violence assaults our senses almost constantly — there is no escape. Newspaper headlines highlight the gory details and television brings the full, miserable story to our homes in living color. No part of this country — or any country on earth, for that matter — has ever been (or will ever be, perhaps) really free from violence.

I cannot recall a single period in the history of man when some sort of violence was not perpetrated on the weak and the inno-

cent by the brute and the bully. Did it all start when the first neanderthal became incensed because his neighbor's cave appeared bigger or better? And was that avarice and envy only solved by crushing the neighbor's head with the nearest rock?

Throughout man's history, there have been some common threads. Ever since Adam and Eve ate from the tree of knowledge, gaining the ability to reason that makes man different from every other animal, homo sapiens have had two intrinsic needs. First, they needed to relate to a supreme being and, second, they found it necessary to communicate with one another.

Remarkably, in striving to attain these two intrinsic needs — god and human communications — man has always expressed a desire to be good. I have never come across a single, basic religion — whatever its belief, creed, testament or covenant — that was not based on the principle that good is better than evil, and love better than hate.

Where is it, then, that we humans go wrong? In describing King Richard III of England, probably one of the most violent of his theatrical characters, Shakespeare knew that even wild animals act better toward each other than some of us: "Villain, thou know'st no law of God or man. No beast so fierce, but knows some touch of pity."

Why are debasement and perversion apparently as pervasive in this society as in any that preceded us? Why have we never learned our lesson? Why are men, women and children experiencing the horrors of civil war in Bosnia and Somalia, or the terrorist bomb attack in Northern Ireland? Why is it that women and children are being abused or raped within a block of our homes, regardless of where we live? Is there no end? Is there no solution?

At times I feel that I am no closer to attaining an answer to these questions than the Psalmist of old who, surveying his world, cried out in anguish: "Destroy their plans O Lord, confuse their tongues, for I see violence and strife in the city."

Fortunately, as dentists practising in the 20 century, we can aug-

ment our cries of anguish with concrete action. At the very least, we can attempt to ease mankind's collective shame, and start to change the way we approach the issue of family violence. In September, during its annual meeting, the CDA board of governors took a step in the right direction. It passed a resolution encouraging Canada's dental faculties to include courses on family violence in their curricula, thereby teaching the dentists of tomorrow how to cope with the issue.

Health Canada's ad hoc group on the dental community's response to family violence issues took another positive step. The group collaborated with CDA's Sydney Wood Bradley Memorial Library to assemble an impressive collection of literature related to family violence. We dentists must now avail ourselves of this valuable information.

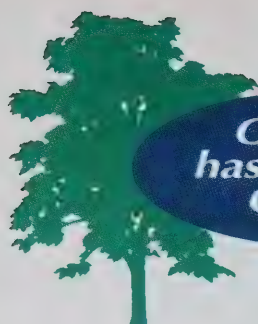
We owe it to our profession and our communities to do something about reducing society's shameful statistics. Fifty-five per cent of females and 31 per cent of males have been victims of one or more unwanted sexual acts; one in every 10 women in Canada (one million) is abused by her partner each year; 60 per cent of female students have been exposed to dating violence; and 70 per cent of the children on the child welfare rolls have at one time suffered from neglect.

We owe it to ourselves to look into our own practices, to observe our patients and our staff. We must look into our own hearts, our homes and our families. Where there is violence, any violence at all, we must act, we must not turn away. If we are afraid to act, or if we are guilty of violence ourselves, we must seek help. We can no longer condone our shame. Hear the message in the words of the 19th century American poet, Emily Dickinson — "If I can stop one heart from breaking I shall not live in vain" — and live by them.

P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association

JOURNAL

November/
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1993
Vol. 59
No. 11



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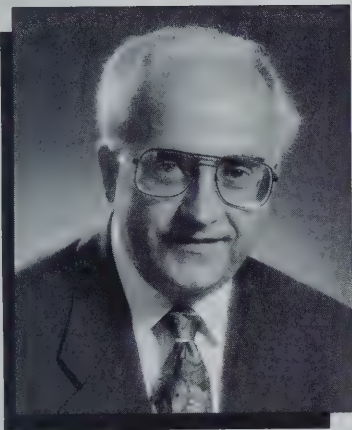
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PRESIDENT'S COLUMN

ANOTHER DENTAL MIRACLE



Dr. Raymond Wenn,
President of CDA

In recent times, dentistry has undergone a transformation. Where the dental profession once focused on restorative work and extractions, it is now driven by prevention. Our goal today is to preserve and promote good dental health. We want our patients' teeth to last a lifetime, and we've come a long way toward achieving this worthwhile objective.

Periodically, a new technique or product has come on the market that has great potential. For example, Health Canada approved the manufacture, marketing and sale of a new "wonder" drug — Chlorzoin — in September. Dentistry has always responded to this type of event in a calm, rational manner. If a product or technique is truly efficacious, it quickly becomes part of our armamentarium. If not, it falls by the wayside.

But no other product that I can remember has been introduced with the hype that surrounds Chlorzoin. According to the press reports, Chlorzoin will virtually eliminate caries, putting an end to the need for restorative dentistry in children. Some stories even suggested that the drug's approval marks the beginning of the end for the dental profession, and implied that organized dentistry was

likely to view this development in a negative light. Regardless of how extreme the reports were, they all agreed that dental practise would never be the same.

But Chlorzoin, which will be marketed as an anti-cavity drug, is not a panacea for all of our patients' dental problems nor a dental miracle, despite what the press reports claimed.

In fact, Chlorzoin is the product of careful research. Dr. James Sandham and his associates at the University of Toronto have been working on the development of the drug since the mid 1980s.

Chlorzoin's basic components are chlorhexidine acetate and tincture of sumatra benzoin. Applied to the teeth, the drug acts as a sustained-release antimicrobial and must be covered with a polyurethane varnish to retard the leaching of chlorhexidine into the saliva.

Treatment with Chlorzoin has been shown to reduce the levels of salivary mutans streptococci to below detectable levels. The drug virtually eliminates the bacteria believed to cause caries for months or even years in both adults and children. Hence its claim to be anti-caries.

Despite all the media hype about Chlorzoin and the drug's apparent effectiveness, however, the profession must step back from the rhetoric and maintain a calm, reasoned approach. We have to ask ourselves: Is this discovery exciting? Does it have potential as a preventive treatment modality? The answer to both questions is a cautious yes.

Dentistry actually has a long history of promoting preventive dental health care. The profession has been instrumental in bringing about the fluoridation of municipal water supplies, a process that began 50 years ago and is still going on today. We also encouraged and supported the development of fluoridated toothpastes, which have been available, with CDA recognition, since the early '70s. And dentists have used pit and fissure sealants as a preventive measure for more than 10 years. The results of these preventive efforts by the profession are clear. Decay rates have dropped by 50 per cent in Canada over the last 20 years.

In this era of budget constraints, health care cuts and hospital bed

closures, we can point with pride to the millions of treatment dollars that have been saved through dentistry's successful assault on the ravages of tooth decay. Chlorzoin may well be the next step in our preventive treatment regime. But many questions still need to be answered before we give the drug our full support. We need to consider, for example, the patient populations that will receive the most benefit from Chlorzoin, the cost effectiveness of the drug, and whether reducing the number of mutans streptococci will affect dental caries in the long term.

Similarly, the fact that gum sweetened with xylitol may have some therapeutic benefit isn't likely, on its own, to tear the dental profession apart. Yes, some studies have shown that gum sweetened with xylitol is cariostatic and that it significantly reduces the levels of mutans streptococci in plaque. Chewing gum also stimulates salivary flow, which in turn helps to neutralize the pH drop in plaque. Both of these actions can contribute to a reduction in dental caries. In fact, one study found that chewing gum sweetened with xylitol may reduce dental caries by up to 62 per cent. This benefits the dental health of our patients, which is why CDA recognized Trident Gum in September.

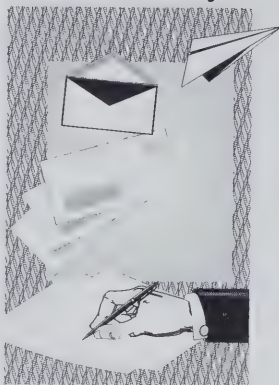
But will these preventive regimes "revolutionize" the way we, as dentists, practise our profession? My answer is: no more than any other preventive measure the profession has adopted. Will they be a "panacea" for our patients' dental health needs? No. The panacea for our patients' dental health needs will continue to be good home care combined with regular dental appointments, including the most appropriate and effective preventive treatment modalities available.

Our patients and the Canadian public should not be confused by the media hype on Chlorzoin. We owe them the time and effort required to clarify the facts surrounding the issues. We owe them our guidance in choosing the best preventive regimes available.

Raymond Wenn, DDS
President of the Canadian Dental Association

LETTERS

LETTERS



Thank you, Dr. Dolansky

I wish to thank past-president, Dr. Bernie Dolansky, for all the work he has done on behalf of CDA. I have had an opportunity for a great deal of communication over a number of years, and have had unusual cooperation and excellent assistance.

I am most grateful for all of Dr. Dolansky's work, and I appreciate how much time and trouble it takes to perform the task of CDA president. I would like people to know just how important CDA is to Canadian dentistry, and how much better relations are between specialists and generalists as a result, to some degree, I think, of Dr. Dolansky's term in office.

Malcolm P. Miller, DDS, MA
(Admin.), M.Sc.
Newsletter Editor
Canadian Academy of
Periodontology

Used Dental Equipment Needed

The Medical Aid Foundation of Canada (MAFCAN) is appealing to readers of your *Journal*, their contacts and suppliers, for contributions of superfluous or used dental equipment and supplies for use in our continuing world-wide relief efforts.

The work of the foundation, a 13-year-old charitable organization staffed entirely by volunteers, consists of initiating and supporting international health care services for people who are destitute and usually in remote areas of less privileged nations.

For example, in December 1991, MAFCAN re-equipped a Red Cross Emergency Hospital in Cozumel, Mexico, which had been devastated by a hurricane. Everything we sent to them, with the exception of one of the two ambulances, was donated by Canadian health facilities and practitioners, as well as manufacturers and distributors of medical equipment and supplies.

In June 1992, MAFCAN sent four 40-foot containers of emergency equipment and supplies to bombed-out hospitals in war-torn Croatia, where the health care delivery system was near collapse. Included were everything from operating tables, surgical and X-ray equipment, hospital beds, and sterile dressings, to breathing circuits, catheters and dialysis equipment.

We are always in need of all types of dental equipment and instruments, including items that may be out-dated by Canadian standards but are still serviceable.

Needless to say, we are constantly looking for financial assistance (as well as material) to support the costs of our operations. Contributions are most gratefully received and official receipts are issued for tax purposes.

Please contact us at 479 Elgin Street, Ottawa, Ontario K2P 2H2, or telephone (613) 230-4242.

Your generosity is solicited and desperately needed to continue to help those whose fate is in our hands, not their own.

Dr. Paul C.M. LaDelpha
President and Director General
Medical Aid Foundation of Canada

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TABLE 1

Dosage in capsules of Rovamycin '250'	
Body weight	(750,000 I.U. Spiramycin/capsule)
15 kg	3 capsules/day
20 kg	4 capsules/day
30 kg	6 capsules/day

absorption is not affected by food. In severe infections, the daily dosage may be increased by one half. In the treatment of beta-hemolytic streptococcal infections, adequate spiramycin dosage should be administered for 10 days. **SUPPLIED: Rovamycin '250':** Each orange and red capsule contains: 750,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50. **Rovamycin '500':** Each grey and red capsule contains: 1,500,000 I.U. of spiramycin. Tartrazine-free. Bottles of 50.

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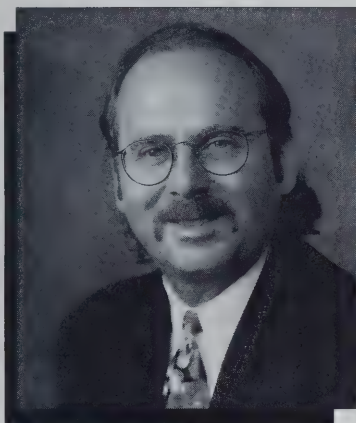
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Novembre
1993
Vol. 59
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NEWS UPDATE

A.O. Mount Royal Dental Society Elects Officers



Dr. Stephen S. Cymet

Dr. Stephen S. Cymet has been elected president of the Alpha Omega Mount Royal Dental Society for the 1993-94 term. Dr. Cymet, a private practitioner from Montreal, earned his dental degree at McGill University. He also holds a bachelor of science and a degree in psychology.

Serving on the 1993-94 executive with Dr. Cymet are: Drs. Warren Retter, Joseph Szwimer, Jack Turkewicz, Lorne Wiseman, Elliot Goldenberg, Jacob Tink and Emil Shiri.

U.S. National Research Council Supports Fluoride

In a report released August 16, the U.S.-based National Research Council stated that the fluoride levels currently allowed in drinking water do not pose a risk of health problems such as cancer, kidney failure, or bone disease.

The council's report concluded that the U.S. Environmental Protection Agency's ceiling of 4.0 ppm (parts per million) of fluoride in drinking water is "appropriate as an interim standard."

Fluoride was first added to U.S. drinking water in the 1940s in Grand Rapids, Michigan. According to the U.S. Centers for Disease Control (CDC), approximately 132-million Americans now receive drinking water that contains fluoride at concentrations higher than 0.7 ppm, the lowest concentration thought to be effective in preventing tooth decay.

The National Research Council is the principal operating agency of the National Academy of Sciences and the National Academy of Engineering. It is a private, non-profit institution that provides science and technology advice under a U.S. congressional charter.

Edmonton Group Elects Executive

The Edmonton and District Dental Society has elected its executive for the 1993-94 term. Dr. Elena Hernandez-Kucey will serve as president, with Dr. Lloyd Culham, past-president; Dr. Rick Easton, president-elect; Dr. Doug Lobb, vice-president; Dr. Catherine Fletcher, secretary; Dr. Roy Fearon, treasurer; and Dr. David Oyen, editor. Directors-at-large are Drs. Patricia Allewell, Paul Lambert, and Ed Stang.

Dental Officers Graduate



Brig.-Gen. V.J. Lancis (left) presents the Honor Candidate Trophy to Captain J.C.M. Lemay of Laval University.



The Field Exercise Trophy is presented to Second Lieutenant J. Hein (right) of the University of Manitoba by Brig.-Gen. V.J. Lancis.

Twenty-one students from eight Canadian dental faculties successfully completed Canada's Dental

Dentist Participates In Easter Seals Regatta

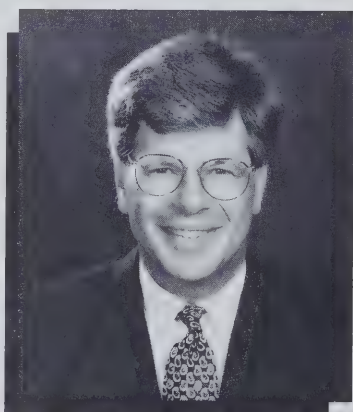


Dr. Wayne Pulver (left) and his crew placed sixth of 18 in their sailboat class during the 1993 Easter Seals Regatta. Held in Toronto Harbor July 11, the event raised close to \$180,000, which will be used to benefit more than 8,000 physically disabled children across Ontario. Dr. Pulver's boat was sponsored by Ash Temple Limited. Over 140 racing yachts and another 40 cruising yachts participated in the annual event.

Officer Training Plan (DOTP) Phase III this year. Graduation ceremonies were conducted August 6 at Canadian Forces Base Borden, with Brig.-Gen. J.V. Lanctis, the Forces' new director general of dental services, serving as the parade reviewing officer.

The DOTP program subsidizes the educational and living expenses of qualified dental students. In return, graduates accept employment in a Canadian Forces' dental clinic for three to four years of obligatory service.

Canadian Academy Of Endodontics Names 30th President



Dr. Wayne Pulver

Dr. Wayne Pulver became the 30th president of the Canadian Academy of Endodontics in August, during the academy's annual meeting. Dr. Pulver received his dental degree from the University of Toronto in 1973 and completed his graduate training in endodontics at Harvard School of Dental Medicine in 1976. He maintains a private practice in Willowdale, Ontario.

In addition to Dr. Pulver, the academy's 1993-94 officers include: Drs. Paul Teplitsky, Saskatoon, Sask.; Terry Smorang, Calgary, Alberta; Steve Brayton, Halifax, Nova Scotia; Calvin Pike, Etobicoke, Ontario, and Wayne Acheson, Winnipeg, Manitoba.

New Face At Experdent Consultants



Mr. Barry McNulty

Mr. Barry McNulty, the president of Chancellor Consultants Inc., has merged his company with Imtiaz Manji's ExperDent Consultants Inc.

In announcing the merger, Mr. Manji said Experdent and Chancellor's decision to combine services was a natural joining for both parties. "Under Mr. McNulty's direction, Chancellor provided personal financial advice to dentists. At ExperDent, we've been providing practice management services exclusive of personal financial planning. By combining our complementary areas of expertise under the ExperDent umbrella, we can now offer clients a complete range of practice management and financial services."

Well known in dental circles as a financial/practice management expert, Mr. McNulty has contributed articles to a number of dental publications, including the *Journal of the Canadian Dental Association*. Mr. Manji's popular column, "Practice Management and Success," has been a regular feature in the *Journal* since February 1991.

Healthco Canada Sold

Healthco Canada's employees were all smiles September 24 after a Boston, Massachusetts, judge approved the sale of the company to Patterson Dental Co. of Minneapolis, Minnesota.

Healthco Canada's future had been in doubt since June 9, when its parent company, Healthco International, filed a U.S. Chapter 11 bankruptcy petition. At the time, Healthco International was believed to owe its creditors more than \$200 million (U.S.). Healthco Canada, which was (and is) a viable enterprise, was to be sold, along with Healthco International's remaining assets in the U.S. and its subsidiaries in France, Israel and the U.K.

The Patterson Dental Co. is the largest distributor of dental products in the United States, with net sales in excess of \$342 million. In explaining his company's acquisition of Healthco Canada, Patterson's president, Peter L. Frechette, said the Canadian market represented a logical extension of his company's growth strategy, and that Healthco Canada was an appropriate vehicle for such expansion.

Quebec Dental Journal Celebrates 30th Anniversary

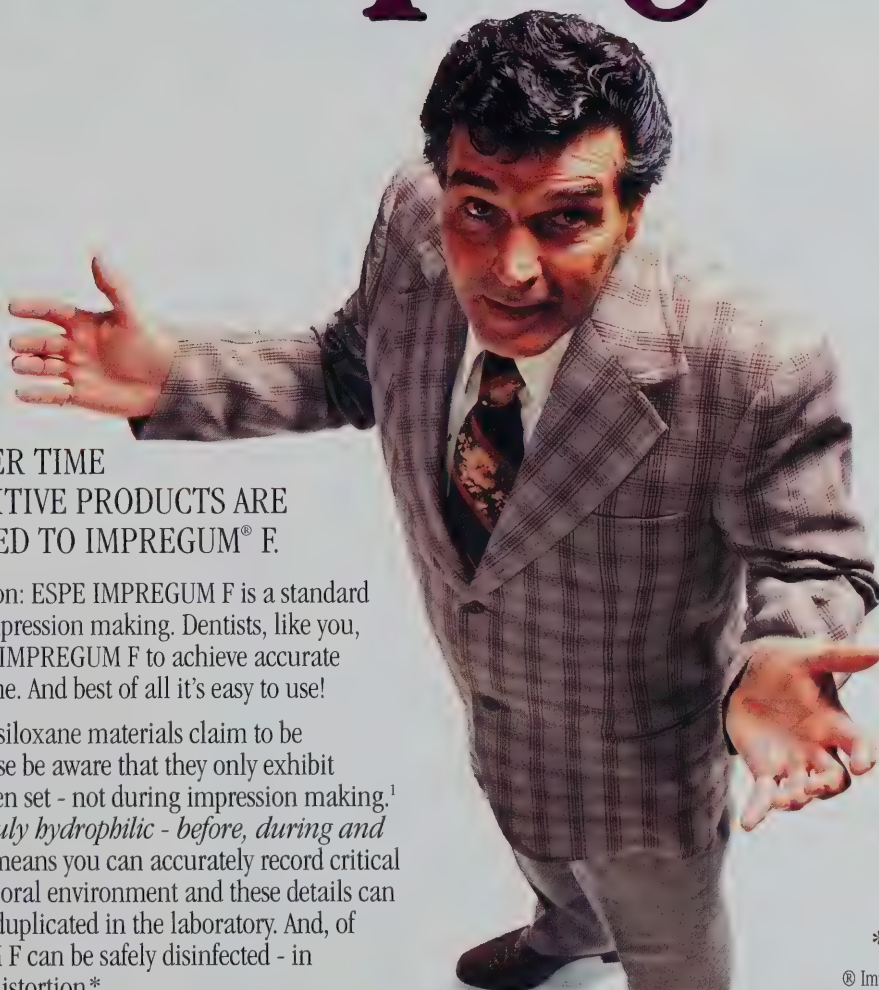
The *Journal dentaire du Québec* is celebrating 30 years of service to the dental profession with a new look.

Published monthly by the Ordre des Dentistes du Québec (ODQ), the bilingual magazine was redesigned in August to make it "easier and more attractive to read." The special commemorative issue also featured a number of new columns, including a historical chronical highlighting ODQ's communication's initiatives over the last 10 years.

"It is not easy to provide an overview and describe in a few words the 300 issues, as well as all the special feature issues, original scientific articles, special sections, ODQ news, press clippings, news about the profession, President's Messages and editorials," said current editor Dr. Denis Forest.

"All our efforts are hardly noticed by some individuals and are severely criticized by others, to the point that over the years we have been made to believe that a silent majority either approve or disapprove the manner in which we function. When economic decisions

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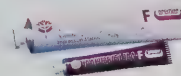
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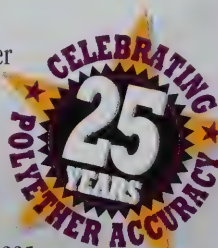
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*Journal dentaire du Québec —
Thirty Years of Service*

have to be made, it is unfortunate that the *Journal* is always the first to be reconciled with, even though one may destroy the only vehicle which records the evolution of our profession."

Membership Concerns Committee Tackles Difficult Questions

CDA's special working group on membership concerns resumed its efforts to ensure that the costs of programs and services provided by CDA are borne equitably by all Ca-



Working Group on Membership Concerns (left to right): Dr. Garry Lunn, British Columbia; Dr. Paul Castonguay, New Brunswick; Mr. Bill Grogan, facilitator; Dr. Bryun Sigfstead, chairman; Dr. David Somer, Ontario; Dr. George Peacock, Saskatchewan; Dr. Robert Salois, Quebec.

nadian dentists September 12, when it held its second formal meeting.

Among the difficult questions on the table were: What programs should CDA offer at the national level? Who should pay for these programs? What factors should CDA consider in devising a membership fee? How can the cost of providing national services be equitably borne by the entire profession? How do we reach consensus on these issues?

Ontario and Quebec are the only two Canadian provinces that have voluntary individual membership in

CDA. This has created a conundrum. While every dentist in Canada benefits from at least some of the programs and services offered by CDA, only 70 per cent of them are footing the bill.

Journal readers are encouraged to express their views on these very difficult questions by sending a letter or fax to the President of CDA, Dr. Raymond Wenn at: The Canadian Dental Association, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6. Fax: (613) 523 7736.



The ad hoc advisory group on the dental community's response to family violence issues (left to right): Seated, Lizette Chevette, Canadian Dental Assistants' Association; Joan Simpson, Health Canada; Jenny Thomas, Canadian Dental Hygienists' Association. Standing, Dr. Elizabeth MacSween, CDA; Sharon Amer, Health Canada.

Library's Family Violence Package Now Available

Working closely with an ad hoc advisory group on the dental community's response to family violence issues, and assisted by a grant from Health Canada, CDA's Sydney Wood Bradley Memorial Library has assembled an extensive literature package to address the issue of family violence.

The package, which includes 65 articles, was gathered from provincial organizations, universities, social service agencies and national associations involved in educating the public and professions about violence and abuse, as well as from the dental literature.

Copies of this special *Family Violence* library package are available to members at a cost of \$10 (plus applicable taxes) by contacting the CDA Library at 1-800-267-6354. (See page 902 for more information.)

Canada Makes History At 1993 FDI World Congress

Canada achieved several historic milestones during the 81st FDI World Congress held in Göteborg, Sweden, August 29-September 2. Of particular note, CDA's executive director, Mr. Jardine Neilson, became the first non-dentist in FDI's 93-year history to be elected to a seat on the council of the federation's general assembly. The honor is an indication of the great respect the world's dental nations have for the role Canada and its officials play in global dentistry.

Canada also took centre stage when an FDI representative at the general assembly extolled praise on the organizational abilities of Dr. Michel Jahjah, the general chairman of CDA's Annual Dental Meeting.

Dr. Jahjah was recognized for his efforts in producing the program of events and activities for the 1994 FDI World Congress, which will be held October 2-8 in Vancouver. The 1994 program was distributed during the Göteborg meeting in four of FDI's official languages: English,



Canadian delegates to the FDI general assembly (left to right): Brig.-Gen. Victor Lancitis; CDA president, Dr. Raymond Wenn; and CDA executive director, Mr. Jardine Neilson.



CDA's booth in Göteborg attracted an never-ending crowd of people, all looking forward to the "show-of-shows" in October '94, when FDI comes to Vancouver.



Promoting the 1994 FDI Congress. It was the first time an entire program of events was made available a full year in advance of the meeting in four of FDI's official languages.



Dr. Michel Jahjah, CDA's Annual Dental Meeting general chairman, welcomes guests to the special CDA luncheon promoting the Vancouver 1994 FDI World Congress.



Anti-amalgamists, dressed as shadows of death, handed out pamphlets at the entrance of the Göteborg congress centre. The pamphlets implied that mercury is a factor in ALS, Alzheimer's, multiple sclerosis, asthma, Crohns disease, diabetes, epilepsy, fibromas, Hodgkin's, psoriasis and colitis. What — they left out hang-nail?

German, French and Spanish, marking the first time that a complete FDI World Congress program has been available a full year in advance of an upcoming meeting.

The Göteborg congress attracted more than 9,500 participants, including 4,570 dentists, 3,100 auxiliaries, 55 students and 1,900 other categories.

Gloves Back On CGSB Certification List

The Canadian General Standards Board (CGSB) has reinstated Safe+Touch latex examination gloves, non-sterile, on its list of products that comply with its water tightness standard, Can/CGSB-20.27-M91.

Safe+Touch latex examination gloves were delisted last May when it was discovered that certain lots of the gloves did not comply with the CGSB standard. The gloves are distributed in Canada by A.R. Medicom of Ville St-Laurent, Québec.

CGSB has also certified Safe+Touch latex surgical gloves (powdered) as well as Accufit latex

examination gloves, non-sterile, which are also distributed by Medicom.

Aurum Ceramic — A Classic

The first annual Canadian Dentists' Golf Classic, sponsored by Aurum Ceramic/Classic Dental Laboratories, raised \$10,400 for dental education and research in Canada.

Held July 30, 1993, at the Kananaskis Golf and Country Club in Kananaskis, Alberta, the tournament was the first of its kind in support of the Canadian Fund For Den-

tal Education (CFDE). Proceeds from the tournament were presented to Dr. Gordon Thompson, CFDE's chairman, by Mr. H.J. (Hyo) Maier, the president of Aurum Ceramic/Classic Dental Laboratories.

Fifty-two golfers took part in this year's tournament. A cocktail reception for tournament participants was made possible by corporate sponsors: Ash Temple Limited, Aurum Ceramic Dental Laboratories, Austenal Inc., Kerr Canada, Nobelpharma Canada, SciCan, and Swiss NF Metals.

Plans are already under way for two similar events next year. The Canadian Dentists' Golf Classic is slated for July 29, 1994, again at Kananaskis, Alberta, with an Eastern tournament planned for August 19, 1994, at Montebello, Quebec.

CFDE is grateful for the outstanding support provided by Aurum Ceramic for this new initiative, and to all the participants in this year's event who made it such a "Classic" success.

Nobelpharma Canada Sponsors Special Fund with CFDE

With the support of Nobelpharma Canada Inc., CFDE has established the Branemark Cranio-Maxillofacial Rehabilitation Fund. Nobelpharma Canada Inc. will contribute \$2,000 annually to this developing fund for five consecutive years. When the fund reaches



The Canadian Dentists' Golf Classic attracted 52 participants and raised over \$10,000 for dental education and research.



Dr. Gordon Thompson

\$10,000, the income it generates will be used "to promote programs in education relating to reconstructive surgery based on the principles of osseointegration."

In addition, the Branemark program will assist patients who require osseointegration treatment, but who have no financial means, by providing free Branemark System components.

Multi-disciplinary teams experienced in Branemark System surgical and restorative techniques, who are associated with teaching hospitals affiliated with Canadian universities having faculties of dentistry and medicine, are invited to submit their patients' cases for consideration. Requests for support will be reviewed by a four-member advisory committee of CFDE, which will make recommendations to CFDE's board of trustees.

Applications and inquiries should be submitted in writing to the Canadian Fund for Dental Education, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6.



Obituaries

Connor, Dr. R.A.: Dr. Connor graduated from the University of Toronto's dental faculty in 1933.

Fedorak, Dr. George G.: Dr. Fedorak graduated from the University of Alberta's dental faculty in 1960. He practised dentistry in Edmonton, Alberta. He died July 16, 1993.

King, Dr. John Jose: Dr. King graduated from the University of Dalhousie's dental faculty in 1958.

Ochitwa, Dr. Yaroslaw: Dr. Ochitwa graduated from the University of Toronto's dental faculty in 1946. He was a life member of CDA.

Lamping, Dr. Joseph D.: Dr. Lamping graduated from the University of Toronto's dental faculty in 1950. He died August 4, 1993. He was 78.

Quigley, Dr. William A.: Dr. Quigley graduated from the University of Toronto's dental faculty

in 1943. After graduating, he practised dentistry in the Canadian Dental Corps from 1942-1945, then went on to earn his MS degree in orthodontics in 1947. He was the first qualified orthodontic specialist in Edmonton, and maintained a practice there even when he served as head of the orthodontic division at the University of Alberta from 1947-1958. He was one of the founding members of the Canadian Association of Orthodontists (CAO), and was honored as a life member of that organization in 1983, by the Alberta Dental Association in 1985 and by the Edmonton and District Dental Society in 1986.

Rasky, Dr. Norman B.: Dr. Rasky graduated from the University of Toronto's dental faculty in 1955.

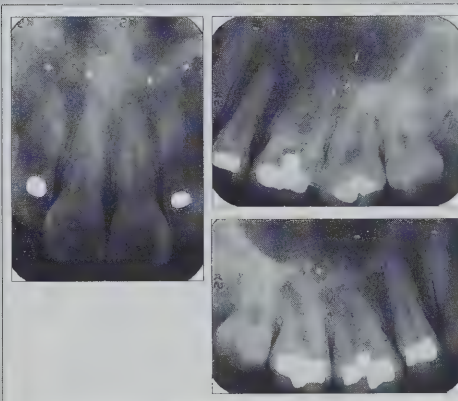
Washington, Dr. L.A.: Dr. Washington graduated from the University of Toronto's dental faculty in 1929. He died March 15, 1993.

"WHAT'S IT?"

Our August "What's It," with its mysterious radiopaque objects, probably evoked more responses than any previous column. The *Journal* extends its thanks to the following dentists for their letters and suggestions: Drs. John Panikvar, St. Catharines, Ontario; Marvin Steinberg, Montreal, Quebec; William Fedosoff, Toronto, Ontario; Yazdis Turner, Pointe-Claire, Quebec; William Flatt, Waterdown, Ontario; William Prusin, Toronto, Ontario; Marc Sekundiak, Winnipeg, Manitoba; Mitchell Levine, Toronto, Ontario; Bryan Williams, Seattle, Washington; Philip Barer, Vancouver, B.C.; Paula A. Sikorski, Toronto, Ontario; and Randy Lang, Toronto, Ontario.

For those who suggested the orderly opacities were flickers in cosmetics, metal from facial abrasions, or ligature end clippings — we think not. We wish to thank the orthodontists who elevated our dental knowledge by explaining that the pieces of metal were implants used as reference points in growth and tooth movement studies that were not uncommon a number of years ago.

Particular thanks to Dr. Rejean Labrie, of the orthodontic section at the University of Montreal, for the reference: Bjork, Arne. Facial growth in man, studied with the aid of metallic implants. *Acta Odont Scand* 13:9-34, 1955. ■



CANADIAN FUND FOR DENTAL EDUCATION NOW ACCEPTING FELLOWSHIP APPLICATIONS FOR 1994/1995 ACADEMIC YEAR

CFDE Fellowships for Teacher/Researcher Training

To be eligible, candidates must be Canadian citizens or permanent residents who have completed an undergraduate course in dentistry, a dental hygiene program, or a program in science, and qualify for admission to a graduate or other advanced education program.

Applicants must declare their firm intention to become a teacher and/or researcher in a Canadian Faculty of Dentistry or Allied Dental Health Training Program. The minimum requirement consists of two years full service to an institution for each year of Full Fellowship support or two years half-time service to an institution for each year of Half-Fellowship support.

CFDE fellowships are not tenable in addition to another major award.

Warner-Lambert Sponsored Fellowships for Existing Teachers

Three individual Canadian Fund for Dental Education fellowships, sponsored by Warner-Lambert Canada and valued at \$2,500 each, are offered annually to a:

- university dental teacher
- dental hygiene teacher or community health dental hygienist
- dental assisting teacher

Purpose

These awards provide established teachers with the opportunity to pursue studies in their individual field of dental education or research. These fellowships support non-degree programs of relatively short duration and are not intended for those on sabbatic leave. Conventions and similar events are not considered appropriate programs of study within the terms of fellowship.

Eligibility

Candidates must be a full-time member of the teaching staff of a Canadian dental faculty, school of dental hygiene or dental assisting, with a minimum of five years university or community college teaching experience; or a community health dental hygienist engaged in an institution or public health setting with a minimum five years experience in community health dental hygiene.

All applications are reviewed by the CFDE's Advisory Committee on Fellowship Selection and recommendations are made to the Fund's Board of Trustees. The winner of each award will be announced after the Board's annual meeting in May.

Applications for each of the above fellowships may be obtained by contacting: the Canadian Fund for Dental Education, 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6, (613) 731-0493.

Deadline for application is March 1, 1994.

Board of Governors Approves New Dental Charity and RRIF

CDA's board of governors has given its approval to a new administrative structure for dental giving and a new retirement fund.

During its 74th annual meeting, held September 10-11 in Ottawa, the board passed a resolution to create the Dentistry Canada Fund. The administration of CDA's five existing dental charities will now be amalgamated under the new umbrella organization. It is expected that the move will reduce the charities' overall operating costs, thereby making more money available for worthwhile activities such as dental research and education.

Under the new structure, the character and identity of CDA's existing charities—the Canadian Dental Foundation, the Canadian Fund For Dental Education, the Canadian Dental Research Foundation, the Sydney Wood Bradley Memorial Library Trust Fund and the Grieve Memorial Lectureship Trust—will be maintained, and dental givers will still be able to donate funds to the charity of their choice.

CDA's new Registered Retirement Income Fund (RRIF) will be administered by CDA's council on insurance and investment, Canadian Dental Service Plans Inc. (CDSPI). The fund, to be introduced this fall, will provide dentists with a unique retirement investment option.

In all, the board heard reports from 13 committees, two councils, one commission and eight dental associations and specialty sections during the two-day meeting. Highlights included the uncontested election of Dr. James Brookfield as vice-president, and the installation of Dr. Raymond Wenn as CDA's president.

With his election as vice-president, Dr. Brookfield, of Kirkland Lake, Ontario, becomes the chairman of CDA's government relations committee, the communications steering committee and the committee on nominations, awards and trusts. He also joins CDA's management committee, along with Dr.



Distinguished Service Award: "For outstanding contributions to the dental profession at the academic level, corporate level, specialty society, council or committee level" (left to right): Dr. John Robertson, Summerside, P.E.I.; Dr. Harry Rosen, Montreal, Quebec; and Dr. Mel Charendoff, Toronto, Ontario.



The Canadian Dental Research Foundation Award was established in 1924 as a memorial to dentists who served in World War I. Every two years, the CDA committee on dental materials and devices invites applications from dental students for a \$2,000 award in support of a student research project. This year's award winner is Dr. Guy Gagnon for his paper on "Cloning, Sequencing and Expression in Escherichia Coli of the PTS 1 Gene Encoding Enzyme I of the Phosphoenolpyruvate: Sugar Phosphotransferase Transport System From Streptococcus Salivarius." Dr. Gagnon (left) accepted the award with Dr. Roland Vallée, the director of the faculté de médecine dentaire, Université Laval, where Dr. Gagnon carried out his research.

Wenn; CDA president-elect Dr. Bryn Sigfstead; and CDA executive director Mr. Jardine Neilson.

Dr. David Somer of Hamilton, Ontario, has been appointed by Dr. Wenn to complete Dr. Brookfield's unexpired term on CDA's executive council. He will be joined by Drs. Barry Dolman (Quebec), Toby Gushue (Atlantic provinces), Richard Sandilands (Alberta), Bernie White (Saskatchewan and Manitoba), and Dr. John Diggins (British Columbia).

Another highlight of the 1993 annual meeting was the CDA awards luncheon. This year, for the first time ever, the winners of the CDA/Dentsply Student Clinicians' Program were announced during the luncheon, which was sponsored by Dentsply. In addition, Drs. Mel Charendoff, John Robertson and Harry Rosen were presented with CDA's Distinguished Service Award, and Drs. Brig.-Gen. Fred Beggin, Allen MacLean, John E. Speck and Robert S. Turnbull received

CDA's Award of Merit. Dr. Micheline Blain, Ms. Carol Clemenhagen, Mr. Cyril Gallant, Rev. Rondo Thomas, and Drs. William Glave, Jack Gryfe, Patricia Johnson, Kerim Ozcan, David Precious, Brian Rocky and Wayne Steggles were presented with CDA's Certificate of Merit.



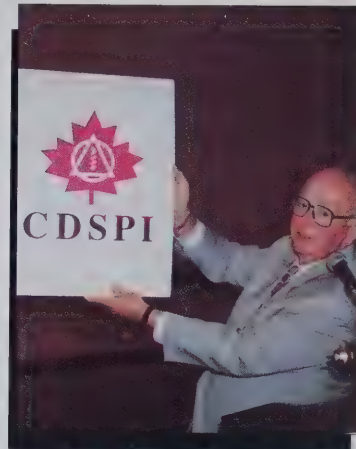
National Dental Examining Board (NDEB) president, Dr. Robert Baker, and executive director/registrar, Dr. Gungeda Kravis, observe the CDA board proceedings. This was Dr. Kravis's last board meeting — she will retire from her NDEB position on December 31, 1993.



Award of Merit: "To an individual CDA member who has served in outstanding capacity in the governing of the Canadian Dental Association or made a similar outstanding contribution to Canadian dentistry" (left to right): Dr. Allen MacLean, Summerside, P.E.I.; Brig.-Gen. J. Fred Begin, Ottawa, Ontario; Dr. John E. Speck, Toronto, Ontario; and Dr. Robert S. Turnbull, Toronto.



Past-presidents don't disappear! During the government relations dinner, held in conjunction with the board of governors meeting, 10 past-presidents reminisced on their days at the top. Left to right (with their CDA annual meeting dates in brackets): Drs. Bradley Holmes (1986), Robert Hicks (1984), Ron Markey (1988), Bernard Dolansky (1993), Les Allen (1992), Bill Thompson (1983), Louis Bernier (1972), Bill Spence (1971), John Robertson (1987), Ralph Crawford (1985).



Dr. Rod Moran, president of Canadian Dental Service Plans Inc. (CDSPI), presents the council on insurance and investment's report to the board and unveils the new CDSPI logo.



Dr. John Zapp, executive director of the American Dental Association, addresses the CDA board of governors. He outlined the ongoing dialogue between the two associations on NAFTA, reciprocal certification, national health care, FDI, environmental controls and infection control.



Mr. Craig Oliver, CTV's Ottawa bureau chief, addressed the board and representatives from the provincial and licensing bodies during the government relations dinner September 9 — the day after the date of the Canadian federal election was announced. In a humorous but pointed presentation, Mr. Oliver outlined the role of the media in political campaigns.

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and therein lies the reason for its superior plaque removal.

Its revolutionary

new bristle configuration promotes more effective brushing because its Triple Action bristles are designed to reach in, between and around teeth and gums without relying as much on brushing technique.

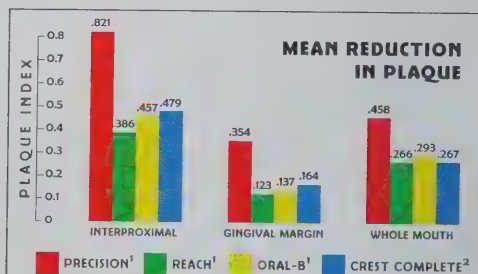
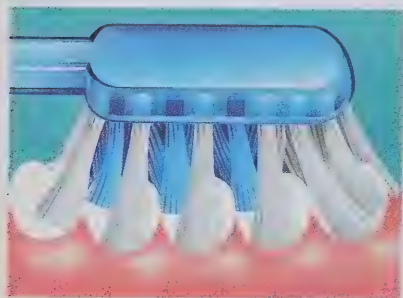
Your patients will probably tell you how good Precision feels when they brush because its long, soft, angled outer bristles

sweep plaque from the gingival margin, yet treat tender sulcus areas with care.

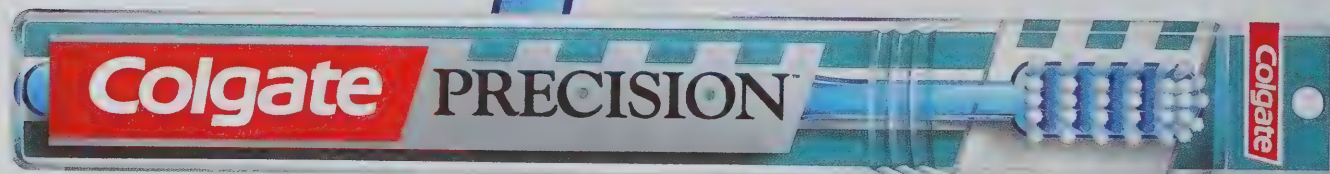
The short inner bristles gently scrub tooth surfaces, while long inner bristles reach deep to clean between teeth.

As a result, Colgate Precision removes up to twice as much plaque as other toothbrushes like Oral-B, Reach and Crest Complete*.

Superior plaque removal and a pleasure to use – two good reasons to brush with Colgate Precision.



1. Sharma, N. et al., BioSci Research, Canada, Journal of Clinical Dentistry, Vol. III, Suppl C: C13 – C20, 1992. 2. Balanyk T.E. et al., Journal of Clinical Dentistry, Vol. IV, Suppl D: D8 – D12, 1993. (Plaque Index values for Precision: Interproximal = 0.763; Gingival Margin = 0.380; Whole Mouth = 0.412).



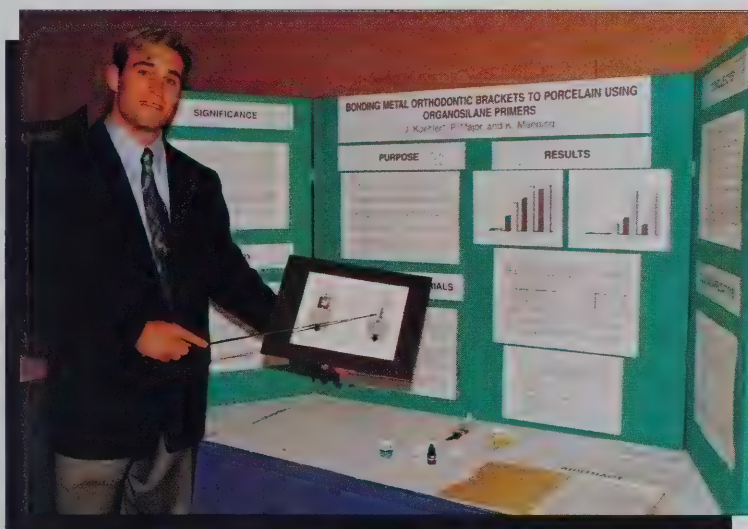
*Clinically proven to remove up to twice the plaque at the gingival margin and interproximally than Oral-B 40, Reach Full-Head Soft and Crest Complete Soft. Oral-B, Reach and Crest Complete are registered trademarks of Oral-B Laboratories, Johnson & Johnson Products, Inc. and Procter & Gamble respectively.
To order Colgate Precision, please contact Colgate Oral Pharmaceuticals at 1-800-225-3756.

Dentsply Dental Student Clinicians' Program:

This year, the annual students' table clinics were presented at the CDA board meeting rather than at the Annual Dental Meeting, which was held last spring and conflicted with the students' final examinations. Sponsored by Dentsply International, the Student Clinicians' Program is always a popular event. This year marked the 22nd time that the program has been presented in Canada.



The Royal College of Dentists of Canada (RCDC) has represented dental specialists at the CDA board meetings for 28 years. Left to right: president, Dr. John McComb; Ms. Kay Montgomery, executive director; and Dr. Keith Titley, registrar.



First Prize: Mr. James Koehler of the University of Alberta was awarded an all-expense-paid trip to the American Dental Association meeting in San Francisco.

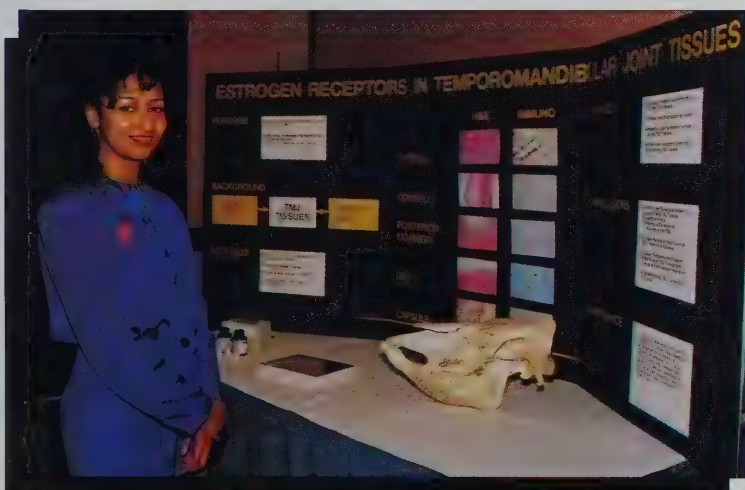


Dr. Bruno Martinello, executive director of the Alberta Dental Association (ADA), says goodbye and expresses thanks to the board. Dr. Martinello will retire from his ADA position in December, after many years of dedicated service to organized dentistry.



✓NOTICE

In the Canadian Fund for Dental Education (CFDE) October mailing to the profession some English-speaking dentists may have inadvertently received a French language brochure with their letter. The CFDE apologizes for any inconvenience this may have caused and will be pleased to forward an English version of the brochure upon request. Please contact us at (613) 731-0493 or the CFDE office at 1815 Alta Vista Drive, Ottawa, Ontario K1G 3Y6.



Second Prize: Miss Sara Hasan of the University of Saskatchewan received a \$500 award.

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The front edges of seat cushions are supported by a rise in the steel floor. This prevents occupants from submarining under their seatbelts in the event of a frontal collision.

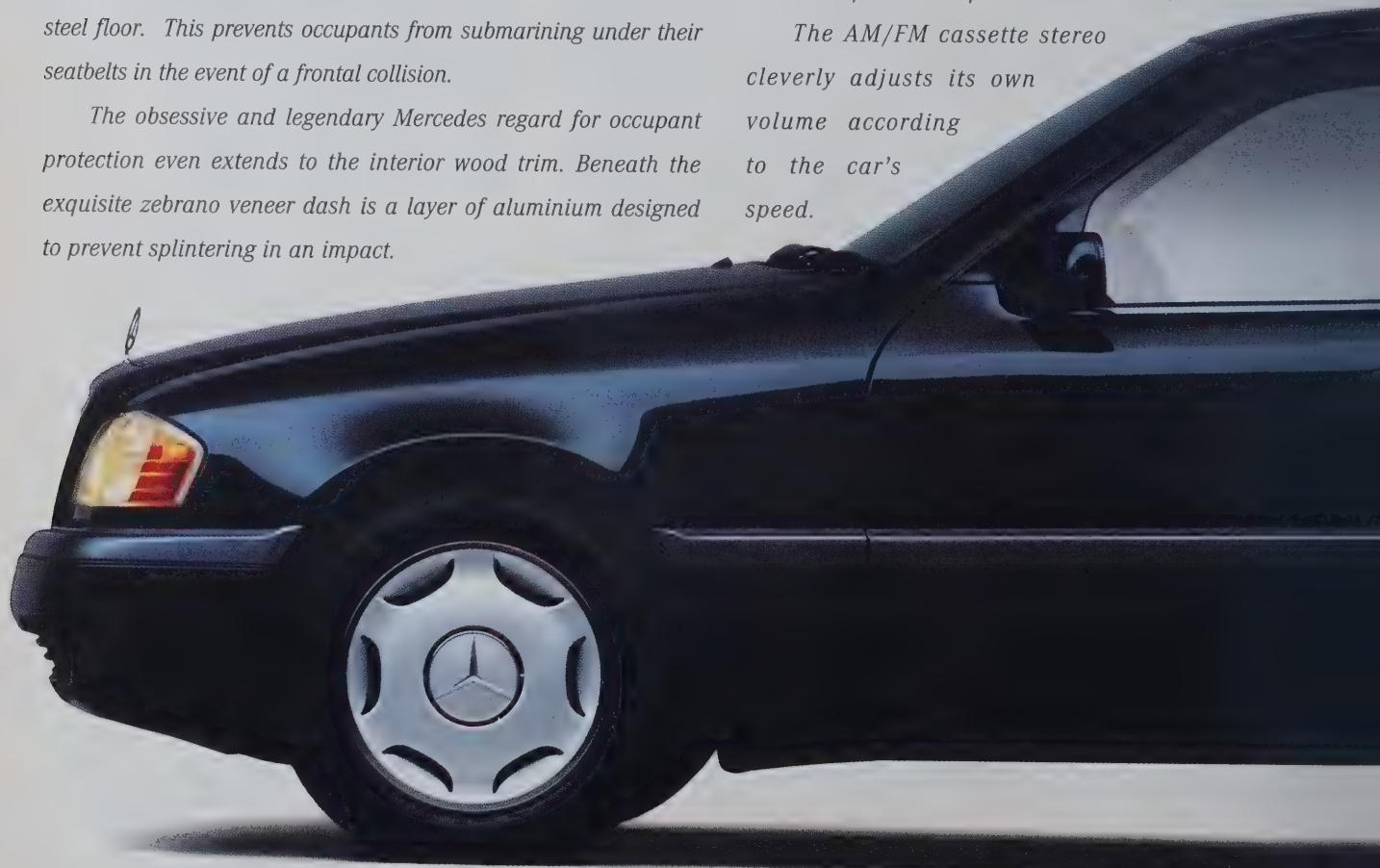
The obsessive and legendary Mercedes regard for occupant protection even extends to the interior wood trim. Beneath the exquisite zebrano veneer dash is a layer of aluminium designed to prevent splintering in an impact.

And of course four-wheel disc brakes with anti-lock, dual bags, side intrusion-resistant beams, and crumple zones that dissipate energy in offset frontal collisions are also not merely standard, but up to Mercedes standards.

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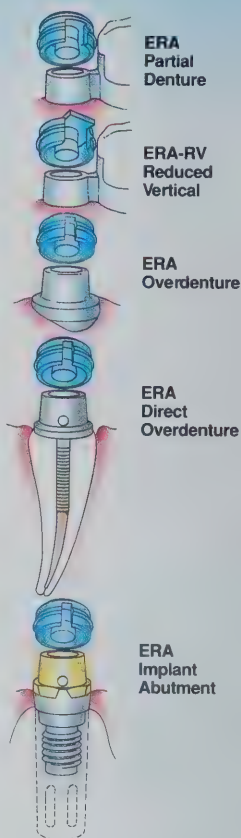
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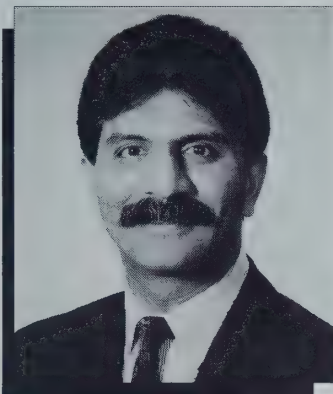
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Achieving Success: Moving Beyond the Comfort Level

Imtiaz Manji, B.Sc.,
President of ExperDent

The following article is excerpted from *Taking Care of Business*, CDA's new practice management program. Consisting of a series of information-packed books, the program is a joint venture between CDA and ExperDent Consultants Inc., with a contribution from Canadian Dental Service Plans Inc. (CDSPI). This is the second instalment of a two-part article on the "Dental Career Cycle." The first part appeared last month.

Handling the Peak

Once a dentist is established in a practice, their goal should be to reach saturation as quickly as possible. Sometimes this can be difficult to achieve. Provided the practice has sufficient new patient flow, saturation is only achieved when the dentist is able to provide treatment at their full ability and capacity. In the early years of easy, steady growth, productivity increased by improving patient flow. As you approach saturation, increases in patient flow have negligible effects on productivity because you already have ample patients.

It is dangerous to assume that you have reached saturation when your productivity peaks. Productivity can level off for many reasons. For most dental practices, productivity levels off because practice management systems are either ineffective or their capacity is exceeded. Dentists who are committed to reaching saturation will

evaluate their practice to determine why growth is being limited. Some of the more common reasons include:

Clinical Speed

It takes time for new dentists to feel comfortable with their skills. Some dentists take an extraordinarily long time to reach a productive speed. However, every dentist should only work as fast as they can competently manage. Growth can sometimes be limited when the dentist reaches a speed limit that is below their potential. Just as new dentists had to learn ways to work faster, established dentists should determine if there are new techniques they can learn to boost productivity.

Assistants

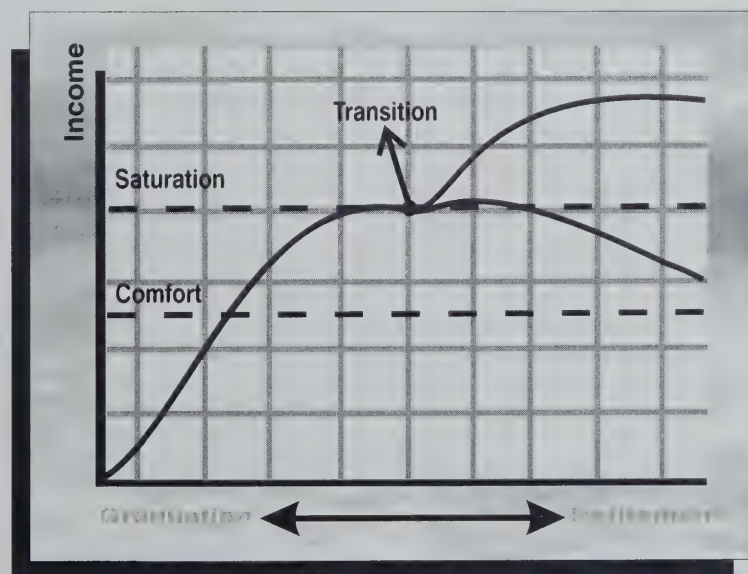
Related to speed, some dentists underutilize their clinical assistants. Productivity can be improved through effective delegation.

Hours in Practice

Some dentists minimize the number of hours they work to maintain a comfortable lifestyle, rather than working the hours they could reasonably manage.

Scheduling

Patients may be scheduled inefficiently or the dentist may not maximize the use of their operatories. Learning advanced scheduling techniques can get growth back on track. Related to clinical speed, you should only schedule as many operatories as you can manage. This



is why some dentists never use more than one operator but others can manage patients scheduled in three chairs.

Facility

From a practical standpoint, some dental offices do not provide enough space to allow continued growth — whether that space is needed for clinical, hygiene or administrative functions.

Continuing Care

Many practices have poorly managed continuing care departments. Not only does this lead to lost hygiene revenue, but clinical treatment that patients need remains undiagnosed if the patient does not return for regular visits to the practice.

Case Planning & Management

Even when dental treatment needs are diagnosed, many practices do not present treatment plans properly and patients do not fully accept treatment to restore their ideal oral health.

If you are not at saturation, there are a limited number of transition options that you can realistically consider. Keeping in mind that revenue and expenses determine your profitability, the only transitions that really apply to you should focus on reducing your expenses. Revenue is most easily increased through effective management.

Your primary expenses in a dental practice relate to your staff and your facility. These two expense items give you an opportunity to increase your profitability. With respect to staffing, administration is the only area you can practically influence. Your hygiene staff should be based on patient need so it should pay for itself. Your assistants are critical to keeping you productive. However, the more efficient your practice is, the less administrative staff you will require. You could examine your practice management techniques to determine ways that the administrative load of the practice can be reduced without affecting the effectiveness of your management strategies. Many dentists have found that revising a few administration-intensive strategies and integrating a

computer system saves them one or two administrative positions. This adds up to a fair sum over the course of a year.

From a facility perspective, you should determine if your facility is too extravagant or too large for your needs. Can you find space that is better suited at a more reasonable cost? If so, then moving your practice is an option that you may consider.

Economies can usually be made by sharing expenses with another practitioner. A facility large enough for two practitioners will probably cost each practitioner less than a private facility. Similarly, administrative staff and equipment can be shared so these expenses can also be reduced. This kind of "facility-sharing" partnership is a good choice for many dentists who are happy with the production but want to lower their operating costs.

Finally, if you are not at saturation, adding an associate may be of little or no benefit. It could even damage your practice — especially if your patient flow is low. Any patients transferred to the associate come from your patient base. This can weaken your personal productivity, while the overall productivity of the practice may not change much — it is simply split between two practitioners. Alternatively, if you have to "protect" your own productivity by limiting or selectively transferring patients to the associate, the associate will become dissatisfied and the relationship will eventually fail.

The Real Transition Opportunity

Once a dentist has reached saturation, no additional effort in practice management will improve their productivity. A practice at saturation is successful to the point that it can no longer keep up with the needs of the patient base. Transitions become the only options available to saturated dentists if they want continued growth in income and practice value. Conversely, if a transition option is not exercised at saturation, the value of the practice will stagnate at its current level since the potential pa-

tient base is being underserved. Remember, a practice can never grow larger than its clinical capacity.

Transitions are the sole solution at saturation, because a dentist can only increase profitability by adding another set of clinical hands to the practice, cutting their costs, or both.

At a very minimum, a dentist at saturation can cut their costs by forming a partnership with another dentist to split facility and administrative expenses. This transition will allow the dentist to increase their income from the practice, but it does not increase the value of their practice. They will still be underserving their patient base and some of their potential will be slipping away each month.

As a variation on the partnership theme, a saturated dentist could find a partner who has only a small patient base. Then, they could sell their excess patient charts to the partner. This approach accomplishes the cost cutting objectives and also allows the dentist to capitalize on their excess patient load.

Alternatively, adding an associate to the practice allows the dentist to keep up with the demands of the patient base. This will protect the value of their practice by ensuring their patients do not seek out other practitioners who can better service them.

The graph shows how the relative income of a dentist may look by integrating an associate into their practice when they reach saturation. The potential income for the dentist far exceeds what they could achieve on their own. That is, the income level is far above their saturation point, even if they choose to slow down their own productivity in the practice.

Our experience has shown that a dentist who works hard and acts promptly at their saturation point can potentially sell their entire patient base three times over before retirement. All this occurs without ever once sacrificing their personal production since the only charts that are sold are excess charts. During the interim periods, they also receive income from the associate's production. Most importantly,

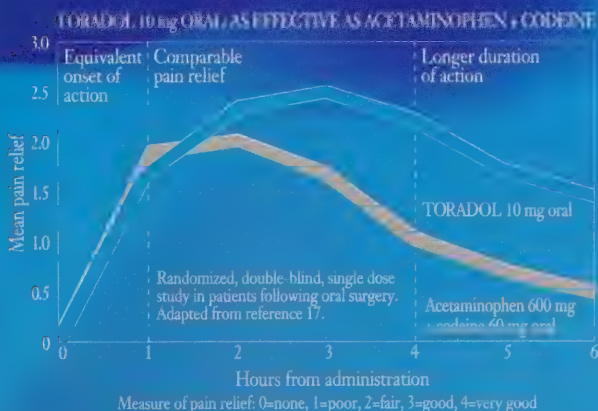
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Toradol (ketorolac tromethamine) oral has been proven effective in acute post-dental surgical pain such as third molar extraction pain and mandibular pain.^{17,18,21} Toradol may also provide effective relief for your patients suffering from toothache pain and endodontic/periodontic pain.



Unlike narcotics which work at the CNS, Toradol works peripherally, at the site of the pain,^{2,3,8} and therefore has a lower incidence of nausea, dizziness, drowsiness and constipation.^{17,18,21,22} The lower CNS side effects may be of particular benefit to patients who need to drive, operate machinery and remain alert or active.

By class, Toradol belongs to the non-steroidal anti-inflammatory drug (NSAID) family. However, unlike conventional NSAIDs, it is a potent analgesic agent with minimal anti-inflammatory and antipyretic activity. As with all NSAIDs, the most common side effects with Toradol involve the G.I. tract.

With proven efficacy and patient tolerability, Toradol oral is a logical first choice in the short-term management of acute dental pain.

TORADOL
10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain





the value of the practice is protected and enhanced with each transition.

Associates that join saturated practices as an equity associate have the security of working in a productive environment. They can draw on the experience of the host dentist and they can confidently expect their productivity to rise. After all, it is in the best interests of the host dentist to keep their associate busy. This is how they maximize the value of the charts the associate purchases from them.

Summary

Understanding the stages of growth, saturation and transition is the first step to setting meaningful career goals. While this concept is fairly new in dentistry, it is not new in other commercial enterprises. Business managers and owners have known for decades that growth stagnates after a period of time. At that point, a new infusion of energy and a reformation of the business's objectives and methods are needed to launch forward into the next phase of growth.

Transition management in dentistry represents periods of growth that are followed by saturation and a comparatively rapid changeover to a new practice form. Saturation occurs when the clinical capacity of a practice is exceeded by the needs of a growing patient base.

The key transitions in the career of a dentist are those from school to practising, and practising to retirement. A great number of dentists (due to low motivation, the comfort level or poor management skills) never reach the saturation point during their practising career. For these dentists, starting out and retirement are the only transitions that will ever apply to them. Dentists evaluating transition options must first identify which career stage they belong to since their objectives will be different at each stage. Dentists in the growth phase should focus on practice management and achieving saturation before attempting a transition.

Since transitions like start-up, retirement, partnerships, associateships and buy-ins have pivotal roles in the life cycle of a practice, transitions must be managed care-

fully to achieve successful results. Without careful planning, poorly made decisions in practice transition can sabotage even the most successful practices. All too often, we come across practices that have been brought to their knees by a transition attempt that has gone awry.

The problem is that few dentists have extensive experience in tran-

sitions. The first step is understanding saturation because transition options are the reward for good practice and value management. The dentist that maintains the value of their practice throughout their career will reach a level of financial security that few professionals can ever attain. ■

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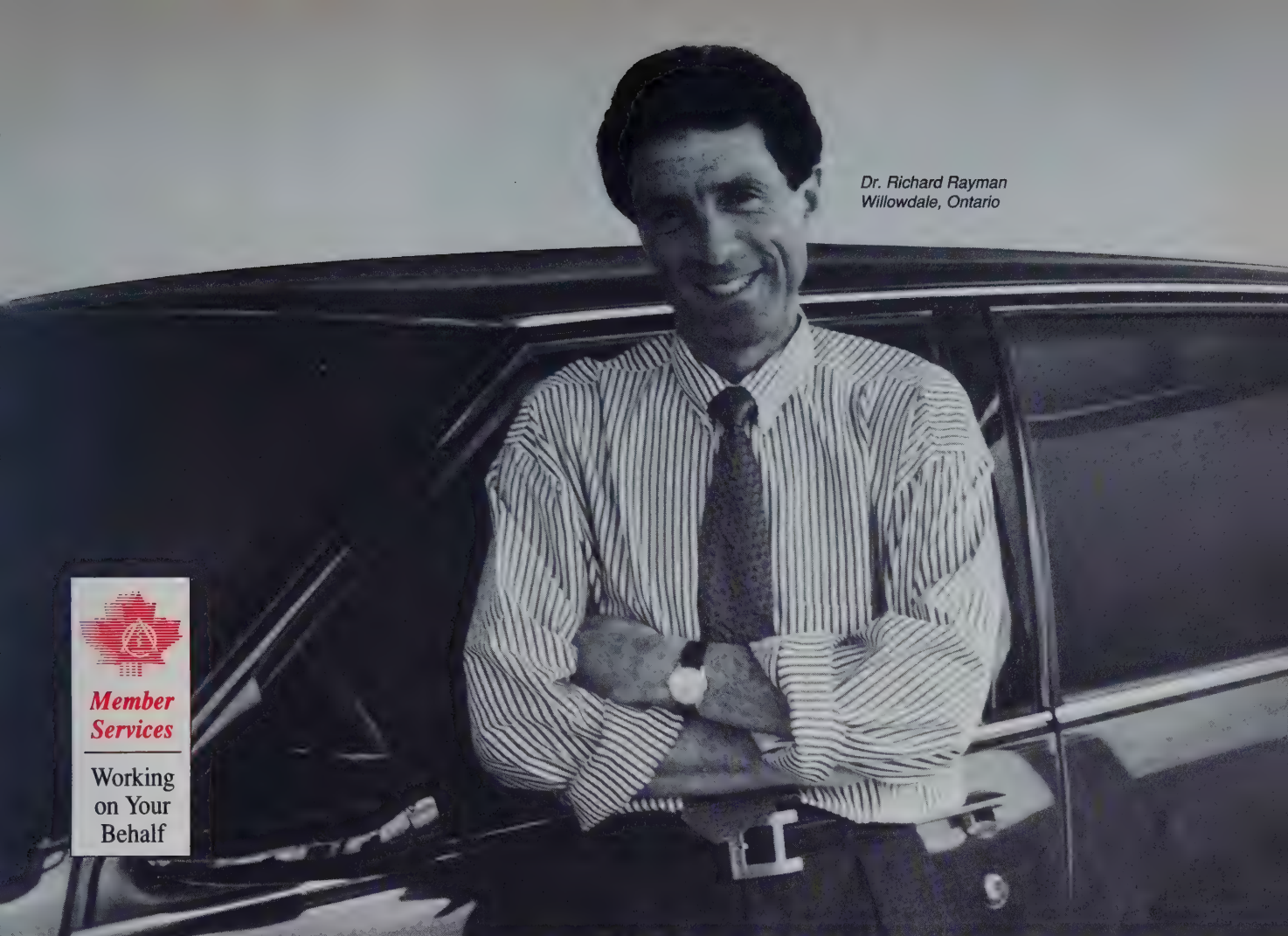
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*Dr. Richard Rayman
Willowdale, Ontario*



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Decades in Dentistry and The CDA RIF: Introducing A New Initiative And A New Product

Dr. Rod Moran, President of CDSPI

Take a moment to envision your retirement years.

So, where were you? Making a perfect putt on one of the world's top 10 golf courses? Sipping a tropical beverage on a secluded island paradise?

Wherever you were, the best way to get there is through strategic financial planning. And the key to this planning is having the right investment vehicles — both on the way to retirement and when you arrive.

Now that I've set the stage, allow me to introduce a new retirement plan being launched this month by Canadian Dental Service Plans Inc. (CDSPI) — the Canadian Dental Association Retirement Income Fund (CDA RIF). Like the CDA RSP, the plan is owned by CDA and administered on its behalf by CDSPI. As a service arm of CDA and the provincial dental associations, CDSPI's role is to develop insurance plans and retirement products that meet the unique needs of Canadian dentists.

Simply put, a registered retirement income fund (RRIF) is similar to an extension of your RRSP, for use after you retire. Thanks to their many advantages — tax sheltering being one — RRIFs are now the most popular of the various retirement income options available. CDA is introducing the CDA RIF to help ensure that Canada's dental profession has access to the best insurance and financial programs available at all stages of their careers — and in retirement.

Decades in Dentistry

The introduction of the CDA RIF coincides with a new initiative from CDSPI called "Decades in Dentistry." It's an approach that recognizes that dentists' financial needs and concerns change throughout the various stages of their careers. After all, a single dentist of 30 just starting up a practice and a married dentist of 55 nearing retirement need very different financial programs.

Decades in Dentistry operates on two fronts.

The first is information. We aim to provide you with all the important facts you need to know at each stage of your career, so you can make well-informed choices to plan your insurance and financial programs. That way, you'll know how to best use all the tools at your disposal.

The second front is products. By continually updating our present products and introducing new ones to account for participants' evolving needs, you will always have the best possible financial vehicles available to you.

The CDA RIF is a new product that serves dentists in the retirement stage of Decades in Dentistry. In the future, we expect to introduce more products on behalf of CDA that are geared to dentists in other "decades." Whether you're studying at dental school, starting or expanding a practice, winding down a career, or enjoying retirement, we will have products to serve the entire course of your career. We're very enthused about Decades in Dentistry and we're confident you'll find the approach to be of tremendous value in your financial planning.

The Many Advantages Of the CDA RIF

As I put it in a nutshell earlier, an RRIF acts something like an RRSP. By law, you must close your RRSPs by the end of the year in which you turn 71. You have several alternatives when you close your RRSPs:

1. Simply cashing them in is one choice, but this is usually undesirable since you'll pay tax on the entire sum in a high tax bracket.

2. You can convert your RRSP to an annuity, which provides you with regular income payments, but the size of the payments are fixed and cannot be changed. As well, annuity payments depend on the interest rates available at purchase time, so, if interest rates are low (as they are

now), you will be locked-in to low payments for life. In addition, when you purchase an annuity you lose control of your money, since it is no longer yours to invest as you see fit.

3. Opening a RRIF allows you to transfer your RRSP funds tax-free and then continue to earn tax-sheltered returns on your investments while you withdraw retirement income. There are minimum payments you must take out, which are taxable in the year you receive them.

As you've noticed, there are drawbacks for the first two options — drawbacks which don't exist with RRIFs.

In a phrase, the major advantages of the CDA RIF are that it provides you with both control and flexibility. Your money goes into your choice of investment funds: Bond and Mortgage Fund, Common Stock Fund, Money Market Fund, Balanced Fund and a wide variety of GIC Funds (including a 10 year and a 25 year fund). These are the same proven funds that have made the CDA RSP such a success for the past 35 years. You choose precisely how you want your money invested and you can transfer money from one fund to another in order to take advantage of changes in the economic climate. Also, you select the frequency of your payments (monthly, quarterly, semi-annually or annually) and the amount of each payment — just the minimum, or more if you need extra income.

Another plus is the extremely low management fee, presently less than one per cent a year for the segregated funds — and zero on the GIC fund. There are no fees when you open your plan or even when you switch segregated funds. Any RRSP funds can be simply "rolled over" into the CDA RIF. Converting from a CDA RSP is especially easy — requiring little more than your signature. (In provinces where Life Income Funds (LIFs) are available, you can also transfer your "locked-in" retirement savings into the plan.)

When it's time to close your RRSPs, you'll find the CDA RIF to be an ideal vehicle for your retirement savings. It provides excellent investment opportunities, tax advantages and payment flexibility — all for a very low cost. ■

TORADOL®

10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain

TORADOL® (ketorolac tromethamine) 10 mg tablets

TORADOL® IM (ketorolac tromethamine injection) 10 mg/mL, 15 mg/mL or 30 mg/mL intramuscular injection

THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anaesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects (n=13), Oral (n=12) (mean age = 72 range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9)(serum creatinine 1.9 - 5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was a 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients as compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rates due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcers or upper GI bleeding are as follows:

INTERVAL	CUMULATIVE OCCURRENCE	
	KETOROLAC	ASA
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before being prescribed Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID, oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS and PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with (ketorolac tromethamine). Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L). Toradol is not recommended: **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serum transaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol IM is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system** - dysuria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorder** - edema. **Incidence 1% or less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorder** - Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system** - chest pain, chest pain substernal, migraine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple 30 mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

These reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous System** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence Between 2 and 3%:** **Nervous System** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, pain, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSEAGE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half;

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

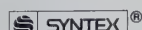
Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: 2. TORADOL Product Monograph, Syntex Inc., Dec. 1992. 3. Rooks WH II. *Pharmacotherapy* 1990;10(6 Pt 2):305-325. 4. Yee JP et al. *Pharmacotherapy* 1986; 6(5):253-61. 5. Brown CR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):455-505. 6. O'Hara DA et al. *Clin Pharmacol Ther* 1987; 41:556-61. 7. Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987. 8. Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. 9. Stanski DR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):405-445. 10. Data on File, Syntex Inc., Document #90027-1, 1989. 11. Stahlgren L. Data on File, Syntex Inc., Document R5-37619, 1991. 12. Data on File, Syntex, Document #90027-2, 1989. 13. Forbes JA et al. *Pharmacotherapy* 1990;10(6 Pt 2):77S-93S. 14. Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2):94S-105S. 21. Data on File, Syntex Inc., Document #90027-3, May 1990. 22. Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. 23. Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-41. 24. Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. 25. Diebschlag W and Nocker W. Data on File, Syntex Inc., Document CL5468, 1990. 26. Molinie J et al. Data on File, Syntex Inc., Document CL4624, 1988. 27. Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. 30. American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 3rd edition, 1992. 36. Huttman W et al. Data on File, Syntex Inc., Document CL4882, 1989. 38. Bloomfield S et al. *Pharmacotherapy* 1986;6(5):247-52. 39. Sunshine A et al. Data on File, Syntex Inc., Document CL3674, 1986. 46. Vangen O et al. *J Int Med Res* 1988;16:443-51. 48. Brown J. *Clin Pharmacol Ther* 1993;53:222. 52. Catalano PA et al. *Surg Gynecol Obstet* 1993;176:435-8. 54. Inklaar H et al. Data on File, Syntex Inc., Document CL3549, 1986. 55. Yee JP et al. Data on File, Syntex Inc., Document CL3849, 1987. 56. Tommeraaes M et al. *J Surg Forum* 1992;43:510-2. 57. Steele R and Dunwood EN Jr. *South Med J* 1992;85:3S-103. 58. Forrest JB et al. *J Dev Clin Med* 1992;10(3):129-50. 59. Stahlgren L et al. *Clin Ther* 1993;15(3):570-80. 60. Launo C et al. *Minerva Anestesiol* 1991;57:1092-3. 61. Boscik V et al. *J Clin Anesth* 1992;4:480-3. 62. Fricke J et al. *Clin Ther* 1993; 15(3): 500-507.

Toradol Information Line: 1-800-561-5481.



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CDA LIBRARY

What's New In the Library This Month?

CDA members can borrow any of the library's books and videos for \$5 each plus applicable taxes. Each month, we produce a new package library—a compilation of approximately 25 articles on a particular dental topic. For a complete list of the videos or package libraries currently available, please call the library at 1-800-267-6354, ext. 223.



To obtain your copy of the package library for November on the subject of family violence, call Diana Garami, Marsha Maslove or Luc-Emmanuel Pinard at: 1-800-267-6354 or 613-523-1770, ext. 234., or fax us at: 613-523-7736. The package and bibliography are available to CDA members for \$10 plus applicable taxes.

Family Violence

The package library for November deals with the subject of family violence. It comes as a result of a bibliography that was compiled by the CDA Library this spring in cooperation with Health Canada's Mental Health Division. The project's intent is to increase the dental community's awareness of family violence.

With the support of a grant from Health Canada, the library has conducted an extensive search of the literature between 1985 and 1993, primarily using the MEDLINE computer database. Other materials were provided for this package by Health Canada's National Clearinghouse on Family Violence, and other Canadian social organizations and agencies.

The package has been divided into four subject categories:

- Child Abuse
- Elder Abuse
- Women Abuse
- Family Violence

Not all the literature contained in each section is targeted specifically toward a dental audience. Some articles and papers are written for physicians, nurses or the general public. Nonetheless, it is hoped that these materials will provide the dental team with valuable information, which will help them to identify and aid victims of abuse.

The reader will notice that the section of the package on child abuse has more dental articles than the section on general family violence. Likewise, there are fewer arti-

cles on elder abuse than on child abuse. However, this package, like all CDA Library packages, will be constantly updated as new articles appear in the literature.

An overriding guide, or bibliography, is included with the package. It contains even more references to family violence materials that can be ordered from various government and social agencies. The bibliography lists articles and papers by author, title, publisher and date, and includes a brief annotation to assist the reader in determining the contents of the article. It also contains a section listing various agencies and social services that provide information and assistance.

The bibliography is also available in French. Please specify your preference when ordering.

The package and bibliography are available to CDA members for \$10 plus applicable taxes.

Here's a sample of some of the articles included in this month's Library package:

1. Ambrose, J.B. "Orofacial signs of child abuse and neglect: a dental perspective." *Pediatrician* 16(3-4):188-92, 1989.

"Fifty percent of all physical injuries resulting from child abuse involve the head and neck, with trauma to the head being the most frequent cause of death." This paper alerts the dentist and physician to the most prevalent orofacial signs of abuse and neglect in children.

2. White, C. "Reporting child abuse and neglect." *J Mass Dent Soc* 42(1):25-8, 1993.

This paper discusses the importance of reporting suspected child abuse. It then suggests a course of action for the dentist when the evidence for abuse is unclear.

3. Jorgensen, J.E. "A dentist's social responsibility to diagnose elder abuse." *Spec Care Dentist* 12(3):112-15, 1992.

"Because of the high prevalence of dental disease and consequent need for dental care in the elderly, dentists are in frequent contact with the elderly, thus providing an opportunity for realizing their social obligation to become more involved in diagnosing and reducing elder abuse." This article describes the causes of abuse and specific protocols for the dentist to use to identify the physical and behavioral signs associated with the mistreatment of elders.

4. Brown, J.B., Lent, B. and Sas, G. "Identifying and treating wife abuse." *J Fam Pract* 36(2):185-91, 1993.

"Wife abuse, acknowledged as a critical problem in our society, is often undetected by family physicians. The purpose of this study was to identify the problems and potential solutions encountered by physicians in the identification and treatment of wife abuse in London, Ontario."

CDA's family violence project is the first of its kind to be undertaken by organized dentistry in Canada. It is a first attempt at gathering information to assist all members of the dental community. Any suggestions that could help improve this package are most welcome.

Recent Acquisitions

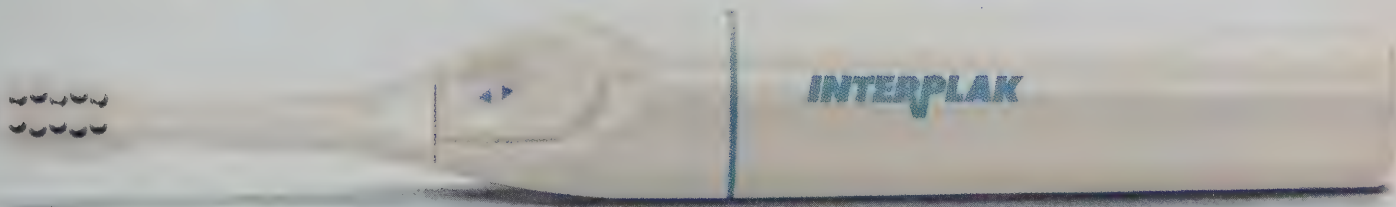
1. American Association of Oral and Maxillofacial Surgeons. *Oral and maxillofacial surgery services in the emergency department*. AAOMS : 1992.

2. American Dental Association. *Annual reports and resolutions*. ADA : 1993.

3. Farman, A.G. et al. *Oral and maxillofacial diagnostic imaging*. Mosby : 1993.

4. Galan, D.H. and Mayer, L.L. *Elder abuse and the dentists' awareness and knowledge of the problem: final report* : 1992.

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BOOK REVIEWS

Temporomandibular Disorders: Guidelines for Classification, Assessment and Management

Edited by Charles McNeill

1993, Quintessence Publishing Co., Chicago, Illinois
141 pages, 12 B&W illustrations and tables

This outstanding work represents the collaboration of 11 well-known American experts in the field of temporomandibular disorders. They have put together an impressive publication under the auspices of the American Academy of Orofacial Pain (AAOP).

In fact, it is the second edition of this work, but it has been appropriately renamed. The first edition, published in 1990, was entitled *Craniomandibular Disorders: Guidelines for Evaluation, Diagnosis and Management*. However appealing the term craniomandibular may be to some, it inherently engenders confusion. Therefore, the AAOP has adopted the term Temporomandibular Disorders (TMD), which it feels is more specific to the orofacial region that this collection of clinical conditions encompasses. This brings the terminology more in line with both the American Dental Association's TMD guidelines and

the International Headache Society's classification for headache.

The most outstanding feature of this book is its simplicity and brevity. This is in contrast to some of its predecessors, which were often encyclopedic and voluminous publications. The AAOP has formulated clear and succinct guidelines that form the foundations for a classification system that is clinically relevant and, as a logical extension, allow the assessment and management of TMD in an organized fashion.

The simplicity and brevity of this book is not at the expense of completeness. There are a total of 721 referenced publications in its bibliography. It consists of six well-written chapters on epidemiology, etiology, diagnostic classification, assessment, and management, as well as an introduction.

In the chapter on diagnostic classification, each diagnosis is paired with its numeric equivalent from the International Classification of Diseases (ICD). Although this is more relevant for American practitioners and their insurance industry, it may one day — with possible changes in health care in this country — have application in the Canadian context.

Finally, there is an impressive 26-page glossary of terms relevant to TMD, which should put readers

at even the most novice level on a more even footing.

The anatomical area encompassed by orofacial pain involves a multitude of health care specialties. Its treatment may involve dentists of every specialty; physicians, including general practitioners, neurologists, psychiatrists, psychologists, otolaryngologists and plastic surgeons; and rehabilitation professionals such as physiotherapists and occupational therapists. This publication by the AAOP is written in such a way that it is useful for both students and practitioners of all the above specialties. Perhaps this is its most important function.

Because knowledge in this field is rapidly growing and changing with additional scientific research, the format of this book has been designed to allow for future changes and periodic updating. Therefore, this book comes highly recommended.

Reviewed by:

George K.B. Sandor, MD, DDS, FRCD(C), FRCS(C)

Oral and maxillofacial surgeon, plastic surgeon, The Hospital for Sick Children, and Etobicoke General Hospital, Toronto, Ontario.

Consulting editor in medicine, Journal of the Canadian Dental Association.

Continued on page 912

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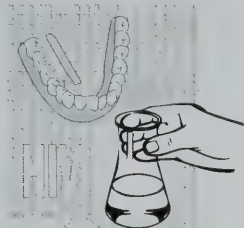


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SPECIALTY FEATURE

FEATURE



Lloyd Bowen — “The Father Of Fluoride In Canada” — Turns 90

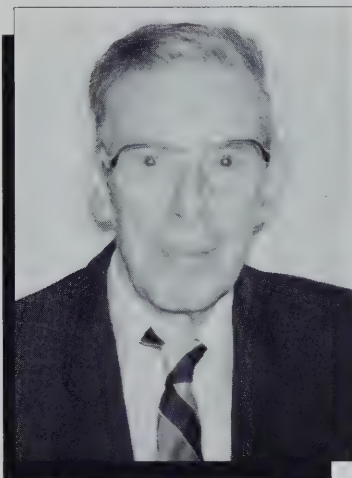
P. Ralph Crawford, BA, DMD

Mrs. Lloyd Bowen celebrated his 90th birthday October 30. Remembered by many as “The Father of Fluoride in Canada,” he spent much of his 35-year career advocating the fluoridation of communal drinking water as the best defence against the ravages of dental decay.

Last month, the *Journal* paid a visit to Mr. Bowen at the Riverdale Hospital in Toronto — where he has resided since fracturing his hip two years ago — to talk about the many “fluoride battles” he fought from the late 1950s through to the mid 1980s.

Born in Sherbrooke, Quebec, Lloyd Bowen was in business prior to the Second World War. At the outbreak of hostilities, he became chief instructor of the Canadian Officers’ Training Corps at Bishop’s University, and later enlisted for service in the Governor General’s Foot Guards. After six years of service in the Canadian Forces, part of it in Britain, he was discharged with the rank of major.

In 1945 the city of Brantford became the first Canadian city to fluoridate its water supply. The 10-year studies that followed clearly indicated fluoride’s efficacy in reducing caries. In the 1950s, Mr. Bowen met Dr. Gordon Bates of the Health League of Canada, who encouraged him to get involved in the promotion of fluoridation. Mr. Bowen became the executive secretary of the Health League’s na-



90 years young: Lloyd Bowen, “The Father of Fluoride in Canada.”

tional fluoridation campaign, a post he held for seven and a half years.

Asked to identify his greatest challenge, Mr. Bowen was quick to reply, “Fluoridation in Toronto — it almost killed me!” Lloyd Bowen’s comment falls into context when Toronto’s eight-year fluoride controversy is reviewed. It began when metro council passed a fluoride by-law in 1955, and took a Supreme Court ruling, numerous legislative attempts, and the Morden Committee report in 1961 before it was decided in a December 1962 referendum.

Mr. Bowen recalls vividly the intensity of the Toronto campaign, with all its ups and downs. One story in particular still gives him a chuckle. In one of his many com-

munity presentations on fluoridation, he had convinced a certain clergyman to come over to the side of dentistry. The next Sunday it was proclaimed from the pulpit that: “Any of you who vote against the upcoming referendum are voting against your preacher!”

The 1962 referendum carried with a very slim margin — only 51.7 per cent of the people who cast a ballot voted for fluoridation. But it was a major victory. When Toronto introduced fluoride to its water supply on September 4, 1963, it became the first Canadian city with a population in excess of one million to have fluoridated water.

Mr. Bowen also recalls fluoridation’s more famous opponents — sometimes with a feeling of annoyance and at other times amusement. He firmly believes that the anti-fluoridation zeal of such educated people as Dr. Dean Burk and John Yiamouyiannis was misdirected. But Mr. Bowen has more understanding for people like Mayor Jean Drapeau of Montreal and Gordon Sinclair, the Toronto journalist and *Front Page Challenge* personality. They, he said, were just misinformed and wouldn’t listen to reason.

In January 1967, Mr. Bowen was invited to join the Canadian Dental Association’s staff as fluoridation officer. That year, he prepared the first of eight annual surveys on the status of fluoridation in Canada. To this day, anyone visiting the CDA

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Vol. 59
No. 11

905



library to review the voluminous files on the history of fluoridation in Canada can still read the neat, orderly records of Lloyd Bowen.

When CDA moved from Toronto to Ottawa in 1976, arrangements were made for Mr. Bowen to continue his duties as CDA's fluoridation officer. He remained in Toronto, working out of the offices of the Ontario Dental Association, who had taken over the vacated CDA building at 234 St. George Street.

As those on CDA's executive council in the late 1970s and early 1980s will recall, Lloyd Bowen retired at least "three or four times." In fact, when CDA settled into its new Ottawa headquarters in the late 1970s, Lloyd Bowen, then nearly 75 years old, showed no signs of slowing down. The CDA transactions of the day contain numerous references to his round-the-world correspondence on all aspects of fluoridation. For example, a 1978 resolution of CDA's health care council stated that an invitation should be extended to Lloyd Bowen to "consider for discussion, a long-term plan for attacking the problem of fluoridation."

On June 30, 1984, Lloyd Bowen, then 81, finally retired. His position

as "fluoridation officer," which he had held for 17 years, was never filled. By the late 1980s, the tenor and tone of the fluoridation controversy had changed considerably from the 1960s. Communities with fluoridated water weren't about to abandon their fluoridation efforts, and those that consistently refused to introduce fluoridated water were not about to enter into a new fray. Today, most fluoride issues of concern to CDA are handled by the association's committee on consumer products recognition or its information officer.

By the time Lloyd Bowen retired, he had received numerous well-deserved honors for his dedication to preventive dentistry, including the Queen's Silver Jubilee Medal (1977). He was also the first non-dentist to be named an Honorary Member of CDA (1979), and the first to receive the Ontario Dental Association's Barnabus Day Award for Distinguished Service (1984). In 1985, the Health League of Canada, the organization that started Lloyd Bowen on his long road of service, presented him with its award for "outstanding contribution to public education and awareness of fluoridation."

Life has changed considerably for Mr. Bowen in the past few years — but his spirit of endeavor remains intact. Two years ago, at the age of 88, after driving his own car home from the market, he decided to rake some fallen leaves. After first raking his neighbor's driveway, he started on his own. Unfortunately, Mr. Bowen slipped on some wet leaves and fell. The result was a shattered hip, a wheelchair and a life in hospital.

But at 90, life's set-backs have not deterred Lloyd Bowen from being involved. His daughter, Sally Bowen, informed the *Journal* that her father is constantly organizing activities within the Riverdale Hospital. He is on a number of committees dealing with his fellow patients' well-being and entertainment. And according to Ms. Bowen, "My father never misses an opportunity to go out on one of the hospital's outings."

In fact, when we first attempted to contact Mr. Bowen, we were told that he was on an outing at the Toronto city hall. And we wouldn't doubt it for a minute if he didn't take an opportunity to find out if they were fluoridating Toronto's water supply properly. ■

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Dr. M. J. T. Dohan, 1940

50 Years Ago — Rescue On The High Seas: The Story of Number 8 Dental Company

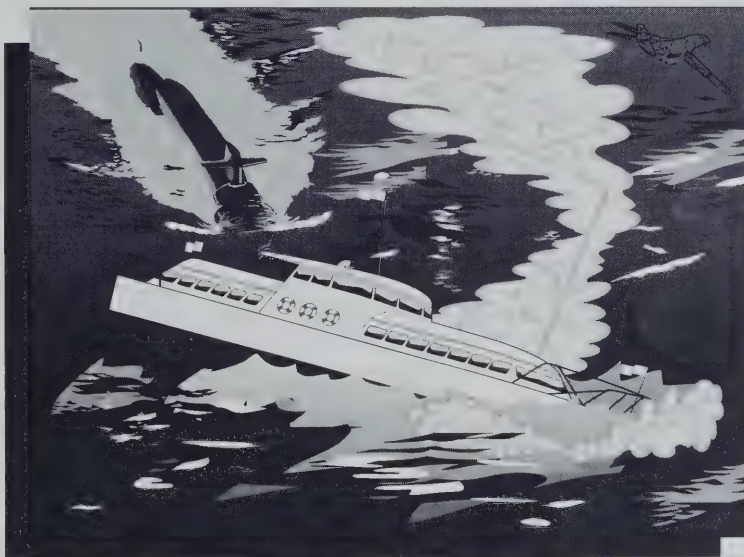
M.J.T. Dohan, CD, B.Sc., DDS

For the officers and men of the Canadian Dental Corps' Number 8 Dental Company, November 6, 1943, is remembered as a day of cold, fear and salvation.

The Santa Elena was off the coast of Tunisia. She had crossed through the Straights of Gibraltar the day before, having sailed from England October 27 as part of a 37-ship convoy, and was steaming toward the Italian theatre. She carried 333 officers and 1,496 men and women of other ranks, including the No. 8 Dental Company, its advance dental stores unit and a record company, as well as the 14th (Montreal) General Hospital and 100 nursing sisters.

Many of the men had just sat down to a troopship dinner, pleased to have left the cold and swells of the Atlantic Ocean — to say nothing a week-long bout with seasickness and a submarine scare — behind. The Santa Elena was a small ship, a former Caribbean cruise liner that the Americans had converted into a troopship after Pearl Harbor. Nine officers shared each cabin, crammed into three tiers of bunks. The other ranks were provided considerably less space.

Dinner on the Santa Elena was a special occasion. Most of us hadn't eaten steak or seen ice cream since we'd left Canada at the start of the war, and both were available in ample quantities. But this dinner



The engine room was struck by a torpedo on the port side ...

stood out. It came at the end of a fine, warm day and, despite a heavy swell, most of the men were in good spirits. The feeling was short lived, however. Just after 6 p.m., the public address system announced the approach of enemy aircraft, and all officers and men were ordered below deck.

Down below, the men and officers of No. 8 Dental Company could only listen to the battle that was raging all around them. They heard the loud retorts of the anti-aircraft guns, machine gun fire, and the whine of planes. Then there was the sound and force of a huge explosion, as the Santa Elena's en-

gine room was struck by a torpedo on the port side. That blast was quickly followed by another explosion, when a small bomb hit the ship's after deck.

Then the lights went out. The officers and men waited in fear as the Santa Elena listed to one side and finally righted herself. Shortly afterwards, the order to abandon ship came over the public address system.

There was no panic in the hold. The men and women streamed up the stairs to the deck in an orderly fashion and made their way to the lifeboats. In fact, the Santa Elena carried just nine lifeboats. These

were soon filled with the 100 nursing sisters and launched. The men were left with large rubber life rafts, which were thrown over the side quickly as the ship's stern settled into the sea and became awash.

For the next two hours, the men made their way down the side of the ship to the sea and swam out to the floating rafts. It was an awkward process. Many of the rafts were poorly equipped, with only one paddle to be had. This made it difficult to paddle the rafts in a straight line, and most ended up going round and round in circles.

The men on my raft were in the water for well over two hours before they were able to reach the rescue ship — the Monterey — which had come back some time after the aerial attack to look for survivors. But that was the least of our worries, as we discovered when we got close to the ship.

There were scramble nets and Jacob ladders hanging down 50-60 feet from the deck to the water...It looked like the Eiffel Tower to us, and we had to climb up on our own. We had reached the prow of the ship. There was a rope ladder swaying back and forth, and with the flair of the bow, it was slapping against the ship. It was a matter of perfect timing to leave the raft, which was rising and falling with the swell, to jump and catch the bottom rung of the ladder, which was also rising and falling and swinging. It was certainly a relief to reach the top and have a couple of strong arms grab you and pull you over the ship's railing.

It was a really physical feat to just climb up the ship's side. A couple of sisters fell back in, but they were quickly plucked from the water.

When the rescue operation was complete, some six hours after the attack had ended, all of the troops and nursing sisters from the Santa Elena were alive and well. They were cold and wet, and many of the sisters had blisters on their hands from rowing the lifeboats, but they'd survived. Not all the members of the convey had been so lucky. Both the *Marinix de St. Aldergonde*, a Dutch troopship, and the escort vessel *HMS Beatty*



Dr. M.J.T. Dohan prior to departure.

had been hit during the attack, and the *Beatty* had suffered some casualties. On the other side, of the 10 German Dornier 217 bombers and 15 Junker 88 torpedo-carrying planes that attacked the convoy, six were downed. One German pilot was rescued by the Monterey.

Once they were on board the Monterey, the members of No. 8 Dental Company were given food and hot drinks, as well as dry clothes. That would lead to some confusion the next day when the rescued troops tried to locate their own uniforms, which had all been hung out on the ship's railings to dry during the night.

Soon it became a case of if it fits just put it on and wear it — regardless of the insignia of rank. There were some quick "promotions" that day.

After the rescue, the Monterey sailed for Phillipville, arriving at first light the following day. That afternoon, less than 24 hours after she had been hit, the Santa Elena appeared on the horizon, under tow. Watching from the deck of the Monterey, anchored one mile offshore, we believed that the ship would be beached. But when she was halfway between the Monterey and the beach, a large spout of air and water erupted from the Santa Elena as though a bulkhead had given way. That was the end.

Our former trooper really settled at the stern, the bow went up in the air, she did a half turn and slid from sight before our eyes, all in about 15 minutes. It's a sad sight to see a ship sink, but when it contains all

your worldly possessions, well, it couldn't have been worse.

The Santa Elena also contained No. 8 Dental Company's dental kits, advance stores and records. When the company's 24 officers and 80 men of lower ranks arrived in Naples, Italy, on November 10, they had nothing except what was on their backs. It took weeks for new dental equipment to arrive from Britain, to say nothing of blankets, uniforms and mess kits. In the meantime, the company had to borrow and scrounge, even for the basic necessities. Some officers were issued a mirror, an explorer and some potassium permanganate for oral examinations.

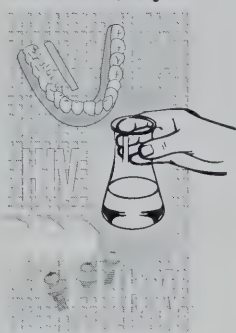
In 1943, No. 8 Dental Company, myself included, was commanded by Lt.-Col. D.J. Ferguson. Among its officers were: Majors L.I. Duffy; D.J.C. Hay; S.M. Somers; S.K. Wetmore; J.S. Wilkinson; and T.I. Guilboard; and Captains M. Claener; S.K. Cogle; T.E. Cragg; R.C. Cullington (Q.M.); R.H.G. Cunningham; C.G.B. Grant; J.G. Helm; C.S. Lea; M.R. McNeill; B.A. Oja; H.T. Oliver; S. Riskin; J.B. Rumberg; L.J. Saunders; G.W. Sugden and K. Zinkann. The two officers from the 14th General Hospital were Majors E.T. Bourke and G.E. Harper.

Strangely, the entire company had been put aboard the same ship, the Santa Elena, instead of being split up among the fighting units. If their ship had gone down with a great loss of life, the entire Fifth Division — which was also in the convoy — would have had to do without dental care until a new dental company could be formed.

As it was, No. 8 Dental Company had yet another scare before it arrived in Italy. En route to Naples, when most of the company were out on deck, the Monterey suddenly executed a sharp turn and began firing her guns. The ship had come perilously close to contacting a mine. Fortunately, the crew was able to avoid the danger, and the rest of our passage to Naples was uneventful. ■

Dr. Jack Dohan lives in Victoria, B.C. and is the Honorary Colonel of the 11th (Victoria) Medical Company. The Monterey, now named the *Britannis*, is still sailing.

FEATURE



Child Abuse: Implications for the Dental Health Professional

Patricia Sibbald, MSW

Clive S. Friedman, BDS

Over the last 30 years, and particularly over the last 10, there has been a growing awareness of the prevalence and long-term impact of child abuse. Formerly believed to be a relatively infrequent problem that concerned only social workers and public health nurses, it is now recognized as a pervasive societal issue affecting thousands of individuals.

Child abuse has implications for a wide range of professionals, including dental health professionals. It is therefore essential for dental health professionals to be fully informed about the issue of child abuse. They must be aware of, a) what child abuse is; b) how to recognize it; c) their legal responsibilities; and d) some implications for treatment. This article presents a cursory overview of child abuse and highlights some of the implications for the dental profession.

What Is Child Abuse?

In general terms, child abuse or child maltreatment can be defined as any behavior or lack of action on the part of a parent, care giver or person in authority that is harmful to the physical, sexual or emotional* development of a child.

Physical abuse is the intentional and excessive use of force against a child by a parent or care giver, generally for disciplinary reasons. Examples can include whipping, biting, burning, scalding, severe



shaking and other forms of violence that result in injury to the child.

Sexual abuse is the sexual use of a child by someone who is in a position of authority over that child. Examples can include intercourse (anal, vaginal or oral); incest; sexual assault; touching a child in the genital area, buttocks or (in the case of girls) in the breast area for a sexual purpose; inviting a child to touch for a sexual purpose or the use of a child for pornography or prostitution. In Canada, while only severe cases of physical abuse are generally prosecuted as criminal offenses, all cases of child sexual abuse can be prosecuted in this manner.

Neglect is another form of child maltreatment. Caused by acts of omission rather than by acts of commission, neglect is a parent's chronic inattention to the basic emotional, physical (including dental) or educational needs of a child. Usually a long-standing condition, there is often less of a sense of urgency about neglect compared to other forms of maltreatment, but it can also have life-long consequences, as witnessed by childhood dental neglect.

A severe form of maltreatment in infants is called "failure to thrive." This condition is identifiable by marked retardation or cessation of growth during the first three years. If no organic reason can be found,

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a neglectful parent-infant relationship may well be the cause.

Is Child Abuse Increasing?

To understand child abuse, it is important to view it within the context of the times. In the ancient world, child abuse was generally not an issue. Children were considered as possessions of their parents (usually the father), to be used and abused as a right. The sexual use of children (except for incest) was tolerated, because such behavior was often consistent with adult wishes or sexual preferences.

During the renaissance, more attention was given to individual rights, including the rights of children. By the mid 19th century, social reform was introduced to protect children, particularly in the area of child labor. Less attention was paid to child abuse during the depression and two world wars of the early and mid twentieth century. The issue was picked up again in the early '60s, however, when Kempe et al¹ published an article that identified "battered child syndrome" and gave prominence to physical abuse. About a decade later, literature related to child sexual abuse began to emerge, and this issue has had high visibility ever since.

Despite the recent surge in the volume of literature on child maltreatment, very little is known about the true incidence or prevalence of child abuse in Canada. Badgley, in a report published in 1984,² estimated that 35 per cent of Canadian children will be victims of unwanted sexual acts before the age of 18, a finding that seems consistent with American statistics. No such figure exists for either physical or emotional abuse, or neglect.

Based on an extrapolation of American statistics, it seems likely that approximately 225,000 Canadian children are affected by abuse at any given time. There is no clear indication that the prevalence of child maltreatment has increased in the 1980s and '90s, although mandatory reporting laws now exist in every province of Canada, and more cases of abuse are coming to the attention of the authorities. Even without clear documentation, however, there is a percep-

tion that child abuse is on the rise in today's society, as is violence in general.



Recognizing Abuse and Neglect

There are a variety of physical and behavioral indicators that may help the dental health professional to identify the possibility of child abuse. It is important to remember that these indicators don't necessarily, in and of themselves, confirm abuse. In general, the more indicators there are, the more likely it is that child abuse should be considered in the diagnosis. Often only one physical indicator is present. However, if it is combined with a history and behavioral signs, the dental health professional should be more alert to the possibility of abuse and/or neglect.

Physical abuse can include bruises, adult bite marks, lacerations, welts, abrasions, fractures, scalding or burns for which the explanation is unclear, inconsistent or unexplained. Injuries may be in the shape of an instrument, consistent with immersion in hot water, or in various stages of healing. Indicators that may be more noticeable to the dental professional include trauma to the teeth as well as injuries to the mouth, lips, tongue, or cheeks that are not consistent with an accident. Adult human bite marks can also indicate abuse. If the distance between the canines is greater than three centimetres, the bite probably came from someone with their permanent teeth.²

A child who has been physically abused may be unable or unwilling

to recall how the injuries occurred, or may offer an explanation that is inconsistent with the type of injury. The child may be wary of adults and may even cringe or flinch if touched unexpectedly. In their social interactions, such children can be excessively aggressive or extremely withdrawn, highly oppositional or very compliant/eager to please. Some are indiscriminate in their affection seeking behavior. A physically abused child may be overly frightened of being hurt by a dentist, or may be overly stoic in the face of pain.

Sexual abuse may be evidenced by excessive or unusual itching or soreness in the genital or anal region, torn, stained or bloody underwear, pain or discomfort in sitting or walking, difficulty in urination, vaginal discharge, anal ulcers, venereal disease and pregnancy. Indicators that may be more noticeable to the dental health professional could include oral lesions, irritation, swelling or bruising around the mouth area, bruising of the hard palate, palatal petechiae, frequent sore throat, acid breakdown of enamel (sperm kept in the mouth over extended periods of time can result in cervical enamel erosion and buccal decay) and poor oral hygiene.

Sexually abused children may exhibit some of the same behaviors as the physically abused child, as well as some behaviors more associated with sexual actions. These can include age inappropriate sexual knowledge and/or play (e.g. replication of explicit sexual acts), promiscuity and "seductive" behavior. Other, more generalized characteristics might include general anxiety, depression, helplessness, poor self-esteem, and self-destructive behavior such as eating disorders, self-mutilation, running away, suicide attempts and alcohol and/or drug use. Behavioral indicators that may be evident to the dental health professional could include fear of being touched around, or entry into, the mouth area, and fear of the person in authority represented by the dentist.

It is important to remember that all child abuse involves the misuse of power and authority over the child victim. In most cases, the



dental atmosphere conjures up an authoritarian "power over" image. If a child is unable to differentiate between the dental atmosphere and the abusive episodes, there is a risk that the dentist will be perceived as another perpetrator.

Neglect can be characterized by low weight, poor hygiene, chronic fatigue and unattended medical needs (such as chronic anemia, severe diaper rash, skin rashes, head and/or body lice or ringworm). A severely neglected infant who is suffering from non-organic failure to thrive may appear pale, emaciated with sunken cheeks and parchment-like skin, and be lagging in his or her developmental milestones. Indicators that may be more noticeable to the dental health professional could include unattended tooth decay, gum disease and poor overall oral hygiene.

Case Examples

The following examples, drawn from actual cases, illustrate how child abuse can impact on treatment. They can only provide a glimpse of the implications for the dental professional; the range is far too vast to explore in one short article. However, they do show how a thorough knowledge of child abuse and neglect could assist the dental professional in adjusting his or her normal procedures to the needs of the patient.

Being Perceived As An Abuser

A six-year-old girl was referred to an orthodontist for evaluation of ectopic eruptions. She was mildly anxious, but willing to have an oral examination. When the orthodontist attempted to take posterior periapical radiographs, the patient began to gag and choke. He persevered and, after much fuss, managed to get the X-rays. On leaving the office, the child attacked her mother screaming that she had allowed him to "do that to her." She refused further treatment.

From age two to 5 1/2, the little girl had been both physically and sexually abused by her father. This included both restraint and oral intercourse. Subsequently, whenever the girl was stressed, she would gag and clutch at her throat as if choking.

Developmentally, this child was unable to differentiate between the treatment being provided and the past abuse, and thereby perceived herself to have been revictimized by the dentist. When the orthodontist's use of dental aids such as gloves and rubber dam is considered, it is easy to see how he could be viewed as another perpetrator.

Flashback

A 25-year-old woman presented with advanced periodontal disease requiring extraction of an abscessed tooth. Although she had been in therapy for the past eight years, the dental procedure caused a psychiatric breakdown and the young lady was admitted to the psychiatric ward of the hospital.

This patient had a history of sexual abuse by her father from age three to 14. He engaged her in oral intercourse for the first time when she was six years old and, coincidentally, her first primary incisor was exfoliated during this incident.

The extraction, with the concomitant bleeding and loss of a tooth, caused what is known as a "flashback" for the young lady. In effect, the abuse incident had been buried in her mind until the memory was revived by the dental procedure. Flashbacks are not uncommon, particularly for victims of childhood sexual abuse. Being aware of an abusive history can be helpful to the dental professional dealing with adult survivors. Indicators of note include the fact that it is unusual for such a young woman to have severe periodontal disease. Also of interest is the fact that poor oral hygiene is often consistent with poor self-esteem, which, in turn, is often consistent with childhood abuse.

Neglect of Treatment

A five-year-old boy presented with an abscessed tooth, poor oral hygiene, and extensive crowding. In the office, he was inattentive to direction, aggressive and very oppositional despite the mother's futile attempts to control him by meaningless threats of violence. The tooth was finally extracted and future appointments made. However, despite repeated calls from the practice secretary, the boy's

mother consistently failed to keep appointments.

This little boy had many of the indicators of neglect and perhaps of physical abuse in addition to his mother's failure to keep his dental appointments. A referral was finally made to the child protection authorities, requesting that they help the parent to accept treatment.

The Responsibilities Of the Dental Health Professional

To start, it is important for dentists and their staff to understand the reporting responsibilities within their own province or territory. Every jurisdiction in Canada has child welfare legislation that mandates the reporting of suspected child abuse to the local child protection services (sometimes called the children's aid society) or the police.

Secondly, it would be helpful for dentists to establish an office routine that might include, for example:

- a routine question or questions in patient histories about childhood experiences, including abuse, that might impact on treatment;
- staff training about the issue of child abuse, including indicators, reporting responsibilities and treatment issues. This training could incorporate presentations by child abuse experts (including someone from the local child protection services) and appropriate readings. In addition, hygienists can be encouraged to spend time with the child patient, to talk with the parent, and to observe the parent child interaction. Receptionists should also be encouraged to watch parent-child interactions and to be aware of repeated cancellations or failed appointments;
- an office procedure or protocol for reporting child abuse and easy access to the proper phone number. Staff should feel free to discuss any concerns and to understand that they have the right to call and discuss questionable situations with the local child protection agency. All staff should understand that their role is not to conduct an investigation to confirm whether abuse occurred (this is the responsibility of



the mandated authorities) but to observe, document and report;

- a procedure for documenting all relevant information, including clinical and behavioral findings in detail, radiograms of affected teeth, and photographs of any suspicious pathology and culturally suspicious lesions.

Treatment Implications

The implications for treating abused or neglected children are far too extensive to be reviewed sufficiently in this article. To gain more familiarity and comfort with the issues, dentists are encouraged to seek out educational opportunities and to watch for signs of abuse or neglect in their child patients. However, given that dental care may be, at best, an anxiety producing event for most people, it is important to remember that a child's behavior may merely be a sign of this specific situational anxiety, and is not necessarily diagnostic of abuse. All indicators must be evaluated in conjunction with the rest of the child's history, and the dentist must determine if the child's behavior is situational specific or generalized. Once it is determined that the child patient is also a victim of abuse, it will be important to adapt the required dental treatment to the specific needs of the child.

Dental health professionals can be an integral part of the community team that helps to protect children from abuse. It is therefore important to be able to recognize the signs, to know what to do, and to be able to help the victimized child through the treatment process. ■

**Emotional abuse will not be addressed in this article except by inference.*

Patricia Sibbald is the director, prevention services, at the Institute for the Prevention of Child Abuse.

Dr. Clive Friedman is a pediatric dentist and maintains a private practice in London, Ontario. He is also an associate professor in the faculty of dentistry at the University of Western Ontario.

Reprint requests to: Patricia Sibbald, Director, Prevention Services, The Institute For the Prevention of Child Abuse, 25 Spadina Road, Toronto, ON M5R 2S9

References

1. Kempe, C.H., Silverman, F.N., Steele, B.F. et al. The Battered Child Syndrome. *JAMA* 181:17, 1962.
2. Badgley, R. (Chairman) *Report of the Committee on Sexual Offences Against*

Children and Youth, Ottawa, Supply and Services, Canada, 1984.

3. Iverson, T.J. and Segal M. *Child Abuse and Neglect: An Information and Reference Guide*, New York, Garland Publishing Company, 1990.

BOOK REVIEWS (Continued From Page 904)

Clinical Assessment In Respiratory Care Second Edition

Edited by Robert L. Wilkins, Richard L. Sheldon and Susan Jones Krider

1990, C.V. Mosby Co., Toronto
319 pages, and 178 illustrations

Today, much more emphasis is being placed on "total" patient care in dentistry and, in particular, the management of a population of patients with a variety of systemic diseases, especially those involving the respiratory system.

Nowhere has this become a more important issue than in the outpatient management of the respiratory cripple requiring extensive dental treatment during deep sedation or general anesthesia. It was with these considerations in mind that I was asked to review this book.

This is a soft-cover edition that is divided into 15 chapters under two major sections: "Fundamentals of Respiratory Assessment" and "Advanced Assessment Techniques." In addition to the three major authors, there are formal contributions from nine other experts. The text is not referenced within the body of the book, but each chapter concludes with a more than sufficient bibliography. To be frank, this is an excellent book that is easy to read and does not get the reader bogged down in the depths of respiratory physiology. It begins appropriately in teaching the reader how to take a thorough medical history, and then explains the techniques of physical examination.

While all body systems are covered, the main thrust, of course, is on the evaluation of the

respiratory system and integrating it into the entire patient evaluation. The cardiovascular system, which is clearly difficult to separate from the respiratory system, gets considerable mention and emphasis throughout the book. There are three very good chapters on laboratory studies and interpretation of pulmonary function tests. While many readers could be tempted to skip over the chapters on intensive care monitoring and pediatrics, etc., it would be a mistake. There are some excellent thoughts in these chapters that the diligent practitioner could apply to his outpatient practice.

This book skims away much of the fine detail and mystique that often shrouds the vast subject of physiology and concentrates instead on areas of importance that the reader is apt to actually use and remember. It remains throughout very much a clinical text. Where more detail is desired, the bibliography is sufficient to satisfy the most demanding practitioner.

I found the book to be an excellent review of the subject. The text was up-to-date, clear and to the point, and the ample illustrations are most helpful to the reader, even those without extensive background training, allowing him or her to fully understand most aspects in the body of the text. Overall, I thoroughly enjoyed this book and feel it would make a welcome addition to the library of any health care provider. ■

Reviewed by:

Earle R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA
Associate professor and head, department of anesthesia, faculty of dentistry, university of Toronto, and the Wellesley Hospital, Toronto.

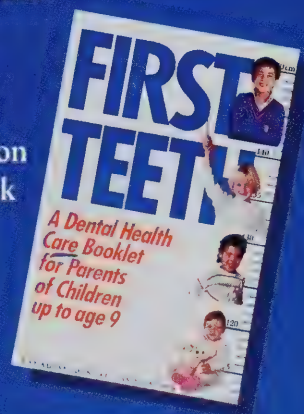
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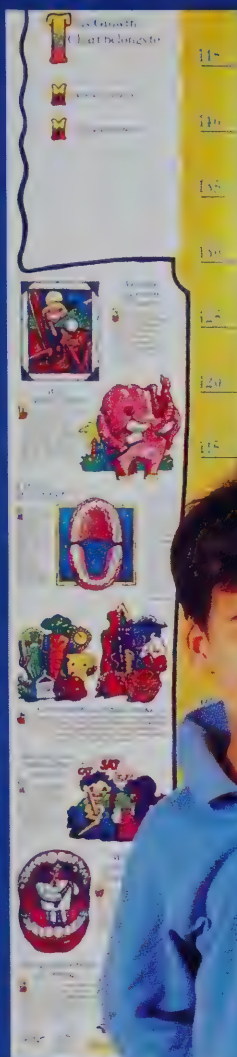
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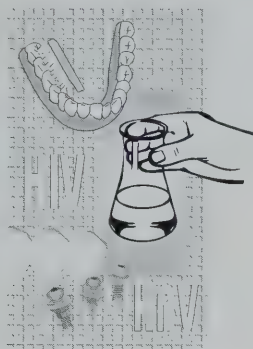


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FEATURE



Elder Abuse and Neglect: A Concern For the Dental Profession

Elizabeth Podnieks, RN, B.Sc. N., MES

ABSTRACT

Although elder abuse and neglect are not new problems, the dental profession is just now beginning to turn its attention to their research, detection, and prevention. Dentists are in an ideal position to diagnose and treat older patients who present with injuries to the head and neck area. This article provides information on the risk factors and indicators for elder abuse and neglect. Intervention strategies are suggested and community resources are listed. It is strongly recommended that mandatory family violence courses should be incorporated into the dental curriculum, and that dentists recognize the need for multi-disciplinary cooperation when dealing with mistreated older adults.

Key words: elder abuse; elder neglect; dentists

SOMMAIRE

Bien que les problèmes de mauvais traitements et de négligence dont sont victimes les aînés ne soient pas nouveaux, la profession dentaire commence tout juste à s'intéresser à la recherche, au dépistage de cas et à la prévention dans ce domaine. Les dentistes sont bien placés pour diagnostiquer et traiter les personnes âgées qui, parmi leurs patients, ont des blessures à la tête et au cou. Cet article

portent sur les facteurs de risque et sur les signes dus aux mauvais traitements et aux négligences dont peuvent être victimes les aînés. De plus, on y suggère des moyens pour intervenir en pareil cas et on y donne une liste des ressources communautaires auxquelles on peut recourir. Enfin, on y recommande vivement que les programmes de formation dentaire comprennent des cours obligatoires sur la violence familiale et on y incite les dentistes à reconnaître la nécessité d'une approche multidisciplinaire pour traiter les personnes âgées victimes de mauvais traitements.

Mots clés: mauvais traitements (aînés); négligences (aînés); dentistes.

Introduction

The subject of abuse is well known in relation to both children and adult partners, but it has only become readily associated with the elderly in the last decade. Based on current estimates of the incidents of elder abuse and neglect in Canada, nearly 100,000 (or four per cent) of older adults have experienced some form of maltreatment.¹ Elder abuse occurs in institutional settings, in the home (by family members, other care givers or neighbors) and in the community (by an uncaring society).

In fact, elder abuse affects every segment of society. It occurs in both

rural and urban areas, affecting men and women from all racial, ethnic, religious and income groups. At the same time, the public and many health care professionals are largely unaware of the existence, causes, and indicators of elderly abuse. This has made it extremely difficult to formulate and promulgate solutions to the problem.

A 1991 survey on aging revealed that 2.8 million (or 11 per cent) of the Canadian population are 65 years or older.² The growing numbers of older adults in Canada present a special challenge to the dental profession. Because many adults have a high prevalence of dental disease and consequently are in need of dental care, dentists may be more frequently in contact with the elderly than other health care providers. This provides an opportunity to become more involved in diagnosing and reducing the incidence of elder abuse. As health care providers, dentists should recognize that their moral and professional obligations to care comprehensively for their patients' health needs must include an awareness of the potential and real signs of mistreatment.³

What is Elder Abuse?

Elder abuse is not uniformly defined in the literature. This poses a major impediment to researchers investigating the scope of the problem as well as to the development



TABLE I
Types of Elder Abuse

Physical Abuse:	Non-accidental use of physical force that results in bodily injury, pain or impairment. Sexual assault.
Examples	Presenting indicators in a dental practice
Punching, hitting	● lip trauma, fractured, subluxated or avulsed teeth
Trauma to oral/perioral structures	● fractures of the mandible or maxilla
Cuts, lacerations or abrasions	● bruising of the edentulous ridges or the facial tissues
Hemorrhaging beneath the scalp	● evidence of prior trauma to dental or orofacial structures ● fractures of the zygomatico-maxillary complex ● eye injuries, orbital fractures ● missing teeth
Pulling hair	● unexplained alopecia
Physical restraint	● rope marks — pressure areas (head)
Psychological Abuse:	Willful infliction of mental or emotional pain by verbal or non-verbal abusive conduct
Examples	Presenting indicators in a dental practice
Humiliation, scolding, intimidation, threatening (e.g. of institutionalization), infantilization	● change in behaviour of patient ● withdrawn, passive affect ● depression, agitation, anxiety ● care giver appears hostile, unconcerned/over-concerned regarding patient
Belittling, contradictory statements, controlling	● receptionist may hear arguing between care giver and older person when on the phone or in the office
Withholding affection	● diminished self-esteem
Material Abuse:	Financial exploitation: unauthorized use of funds, property, or any resource of an older person
Examples	Presenting indicators in a dental practice
Absence of government funding to needy older person	● lack of dental care
Theft of pension cheque, money or property	● unpaid dental bills
Deceit, fraud	● older person poorly dressed ● ill fitting dentures, excuses as to why new ones not obtained ● care giver questions dentist on necessity of dental work for older person, e.g. "at her age?" ● disappearance of older person's possessions in an institutional setting
Neglect (Intentional or Unintentional):	Deprivation of basic necessities or services that are necessary for maintaining physical or mental health.
Examples	Presenting indicators in a dental practice
Withholding nutrition, fluids	● malnutrition, emaciation, absence of dentures, dehydration, xerostomia, angular cheilitis, glossitis, confusion
Poor hygiene, personal care	● impaired skin integrity, rashes, unkempt appearance, body odors, halitosis, poor oral hygiene, rampant dental disease
Withholding medical/dental services/treatment, or medication	● not taken to dentist, doctor, therapist ● appointments frequently cancelled ● difficulty in arranging appointments ● care giver states there is "no time" to take older person to dentist

of effective policies and legislation. In fact, there has been little consensus among practitioners and policy makers with respect to what constitutes each type of elder abuse and neglect. Because of this confusion,

a generic definition of elder abuse will be used here: "Elder abuse is any act or behavior by an individual or institution which results in the physical or mental harm or neglect of an elderly person."⁴

Types of Elder Abuse

There are many different classification paradigms for elder abuse and neglect. However, most researchers use the following catego-

**TABLE II****Characteristics Of Abused Older Persons and Their Abusers**

Who is Abused?	Who is the Abuser?
● 65 years and over	● may be middle-aged or elderly
● female/male	● male/female
● progressive physical and/or cognitive impairment	● family member, care giver (roomer, landlord, guardian) ● experiencing stress: financial or medical problems, marital conflict, substance abuse, unemployment, lacks knowledge of care giving role
● denies abuse: reluctant to report	● blames older person
● dependent on abuser for physical/emotional needs	● may be dependent on victim for money or housing
● may exhibit problematic behavior	● has ineffective coping and communication patterns ● ineffective problem-solving skills
● may feel abuse is deserved	● increasing demands of care giving role may be depleting family resources
● socially isolated	● socially isolated
● may feel powerless	● may have difficulty controlling feelings of anger and/or frustration
	● resents role-reversal with parent

ries: physical abuse, psychological abuse, material abuse and neglect (Table I).

Physical abuse is the most easily identifiable type of abuse, and encompasses any behavior that may result in physical harm. A dentist may be the first professional to examine the patient and therefore his or her knowledge of the possible indicators of abuse are of utmost importance.

Psychological abuse is a very broad category that researchers have found difficult to define and measure. Consequently, some categorize all manner of family problems under the label of abuse.⁵ Psychological abuse often occurs in combination with other forms of maltreatment. For example, an older person can be denied access to grandchildren unless he or she consents to signing over assets to an adult child.

Material abuse or financial exploitation ranges from careless mismanagement of the elder's money to major threats that may actually leave the elder penniless and without the basic necessities of life. Neglect is most often seen in the form of medical, dental or physical needs that a care giver, employee,

or friend fails to provide. These needs may include a lack of personal hygiene, poor nutrition and a failure to provide medical/dental treatment.

Self-neglect is the most prevalent form of neglect. If an elderly individual is competent, there is little the professional can do if this individual fails to seek or refuses health care. However, the professional who engenders a trusting relationship with the elderly person can "leave the door open" for them to accept help when they are ready.

Research has shown that while there are similarities among victims of the four forms of abuse and neglect, there are significant differences as well. The profiles of victims of verbal and physical abuse are similar, whereas those of neglect and financial abuse victims differ substantially. Interestingly, victims and perpetrators have some of the characteristics of an abuse dyad (Table II). All forms of maltreatment appear to have serious consequences for the well-being of victims. Different forms of maltreatment call for different prevention and intervention strategies.

Causes of Elder Abuse

Factors that contribute to elder abuse include many of the same factors associated with family violence in general. Researchers agree that there is no single factor responsible for the maltreatment of older persons, but rather that the causes of elder abuse are numerous, complex and interactive.

Older persons who are or who perceive themselves to be helpless and dependent are targets of abuse, especially when they also have physical and cognitive impairments. Ongoing provocative behavior may initiate retaliatory behavior that is abusive on the part of either the older person or the care giver.

Elder abuse can occur in homes where there is a lifelong pattern of violent relationships such as spousal or child abuse. In a cycle of violence, the abused person may in turn become the abuser. Power conflicts may also contribute to abuse.

The abuser may be a person of few financial and psychological resources, and may be dependent on the victim. Feeling powerless in the family situation, the abuser may resort to violence. Care givers providing support may feel that they are not receiving enough gratitude for all their efforts and thus resort to abusive behavior.

Situational factors may increase stress on a care giver, who is often responsible for one or more younger dependents as well. The care giver may be experiencing the stress of unemployment, substance abuse, poverty, marital conflict, or health problems. Sociocultural factors include pervasive, negative attitudes toward older persons (ageism), which encourage uncaring treatment of the elderly and may lead to abusive situations within the family.

Consequences of Abuse

The physical, emotional and psychological consequences of all forms of maltreatment can be life-threatening. Injuries requiring medical/dental attention are not necessarily more harmful than intimidation, insults and exploitation experienced on a continuing basis.



Neglect can be so damaging, and so irreversible, that the older person may long for the release of death.

In the absence of assessment tools and protocols, physical abuse of the elderly often goes unrecognized by professionals. It is easy for the abuser to explain cuts, bruises or fractures as being due to the frailty of the older person. Abuse by family members or care givers may only be uncovered when the victim is hospitalized, taken to the doctor's or dentist's office, or during routine visits by community-service professionals. It is rarely reported to the police because victims are reluctant to bring criminal charges against family members or care givers.

Victims of abuse are usually isolated. While they keep their pain well hidden from potential sources of help, they suffer the humiliation of wondering why their child or care giver is mistreating them. Feelings of guilt, shame, embarrassment, fear of retaliation and loss of their support system keep many older persons helpless and silent. Others who may know about the abuse tend to stay away, and not become involved in a situation they perceive as private or beyond their ability to resolve.

Intervention

A trust relationship is critical in maintaining a therapeutic alliance with both the patient and the family. The dentist who suspects or even determines the presence of abuse should remain objective, nonjudgmental and supportive. A sympathetic and understanding approach should be used throughout the interview and subsequent examinations. Identification of the stressors influencing the victim and of the potential abuses is important.⁶

The dentist should be particularly aware of the impact of cultural and ethnic diversity. Practises that may be seen as abusive in one culture may be considered as the norm in another. Numerous services and supports are needed by elderly victims, their care givers and their families (Table III). Dentists and their staffs should be aware of these

TABLE III

Services Possibly Needed By At-Risk Older Persons, Their Care Givers and Families

	Older Person	Care Giver - Family
Prevention	● legislation, protective services ● advocacy ● ombudsman ● support groups ● crime prevention ● mental health counselling	● education in normal aging ● community support for care giving families ● courses in caring for the elderly ● mental health counselling
Support	● health services and supplies ● legal assistance, guardianship ● friendly visitors ● meals-on-wheels ● visiting nurses ● home supervision ● occupational and physical therapy ● information and referral ● transportation and escort ● senior centres ● day care ● alternate housing ● peer counselling ● self-help, support groups ● religious organizations ● telephone reassurance	● health services and supplies ● family counselling ● alcoholism and drug-abuse treatment ● nutrition counselling for elderly ● financial assistance ● homemaker, home health care ● family support groups ● respite care ● affordable day care ● chore services, house repair ● information and referral ● intergenerational linkages ● elder companions
Emergency	● crisis intervention ● crisis hot line ● emergency shelter, "safe place" ● health services ● victim assistance ● law enforcement services ● emergency financing	● crisis intervention ● "abusers anonymous" ● voluntary emergency caretakers ● homemaker and home health care assistance

services, and how to access them, to enable them to direct patients, care givers and families to the appropriate resources.

Multi-Disciplinary Consultation

No one profession can intervene alone in cases of elder abuse. The dentist can only go so far in the examination of a patient, and must

therefore present the patient's care giver with his or her concerns for the patient's well-being, as well as proposing possible referral plans. Without being accusatory, the dentist can insist on further physical examination of the patient if the information provided by the care giver does not correspond with the extent of the injury observed.⁵ The dentist should also discuss the case with the patient's family physician to diagnose elder abuse on the ba-

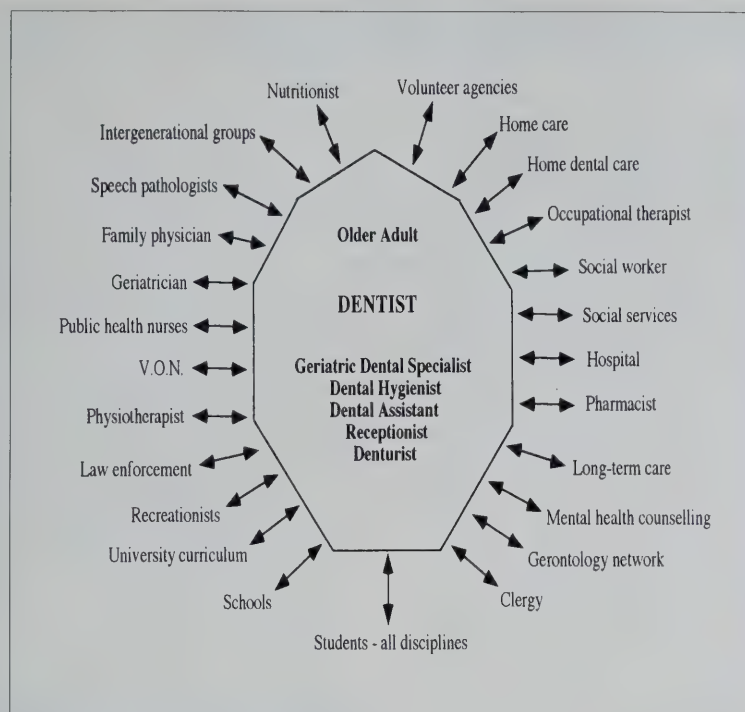


Fig. 1: Sources of support and referral.

sis of physical findings, and also because the care giver might not follow through on the dentist's recommendations. In every case, the dentist should forward all pertinent documentation to the appropriate consulting professionals. This material could include any observation made by the office staff following a case discussion with all the staff present.

Fig. 1 illustrates the communication lines that must be kept open if there is to be a collaborative and cooperative approach to intervention in elder abuse. Working with an interdisciplinary team will build trust, promote cooperation and respect between disciplines, and provide holistic care to the patient.

Role of the Dental Professional

1. Develop a protocol of assessment, consultation and referral. Orientate all staff and students to the protocol. Maintain a high index of suspicion.
2. Recognize that identification of elder abuse begins with the initial

office visit and continues with each subsequent interaction.

3. Train office staff to observe and/or interview the older person while in the reception area, i.e. observe the interaction between the patient and care giver.⁹ Get a sense of their relationship — are they relaxed, talking and listening to one another, are there signs of fear or hostility, lack of eye contact, is the patient's posture rigid, clenching of hands, etc.?

4. Make a complete examination of patient's head, neck and other visible parts of the body, and look for any signs of abuse. Observe how the patient is dressed. How does he or she react to questions?

5. See that the examination takes place without the care giver present (if possible).

6. Take a detailed history that charts all the important aspects of the historical and physical examinations. Include photographs and radiographs if possible.

7. Be suspicious when injuries do not coincide with the patient's or care giver's explanation.

Legislation

A social policy agenda and heightened public awareness of the issue have led to increased political activity to counter abuse of the elderly and protect this vulnerable population. Political activity has largely been a response to public pressure, often arising from grassroots organizations. Canada's four Atlantic provinces, as well as most jurisdictions in the United States, have responded to the problem of elder abuse by enacting adult protection legislation. This legislation usually includes a mandatory reporting clause that requires health care professionals to notify the police or other social agencies of perceived elder abuse. In addition, some adult protection legislation grants powers to a designated minister to investigate the circumstances of elderly people who are believed to be in danger of abuse or neglect. Such powers must be carefully crafted lest this approach result in an invasion of an elderly person's privacy and a loss of self-determination.

Mandatory reporting provokes strong debate because:

- 1) it impacts on the trusting relationship between client and professional;
- 2) it invades the privacy of the older adult;
- 3) it removes the individual from decisions affecting his or her own life; and
- 4) it increases the rate of institutionalization.

It has been demonstrated that an effective voluntary system can achieve the goals of mandatory reporting without jeopardizing a senior person's right to self-determination. Mandatory reporting in institutions is recognized as an important prevention strategy, however, due to the vulnerability of the residents. Ontario has enacted such legislation.

Similarly, the issue of guardianship in Canada is currently under review in a number of jurisdictions. Many statutes have been problematic in that they tended to over-emphasize the issue of mental ca-



capacity, without recognizing the need for evidence of functional disability when determining competency. Thus, a person could be placed under guardianship regardless of how well he or she was functioning and handling personal and financial needs. In general, there must be greater flexibility in guardianship legislation, allowing older people to control those areas of their lives in which they are capable of making decisions.

Prevention Through Education

Education is the cornerstone of prevention. It is crucial that all professionals concerned with the health care of older adults be familiar with the typical manifestations of abuse and neglect. Such education should be part of dental school and continuing education curricula for dental assistants, hygienists, denturists and practising dentists. The theories on aging and the psychosocial aspects of aging could be incorporated into these courses, which would provide a greater understanding of the physical and emotional needs of older adults. These courses could be given in cooperation with medical and other health-care related schools, e.g. nursing and social work. In addition, resource materials such as protocols, manuals and audiovisuals could be prepared for professionals and paraprofessionals, at appropriate levels.

In a recent survey, Holtzman¹⁰ found that young practitioners and recent dental school graduates were not significantly more aware of abuse and/or neglect than older practitioners. They were just as reluctant to go beyond simply providing dental care to elderly abuse victims as their older colleagues.

Another pressing educational need is to develop and mount courses to prepare dental geriatricians.¹¹ Dentists are seeing more and more older adults today, which will present the health care system with unique challenges. Older persons have many complex medical and dental problems that are quite different from those of younger people, including those arising

from their vulnerability to abuse and neglect.

Challenges for the Dental Profession

If dentists are to contribute to helping solve elder abuse and neglect, the dental profession must respond to several challenges. These include:

- 1) Acknowledging and recognizing the problem of abuse and neglect;
- 2) Overcoming negative attitudes towards the elderly (ageism);
- 3) Increasing dentistry's contributions to the literature regarding abuse diagnosis and prevention, by engaging in pertinent research;
- 4) Putting elder abuse and neglect on conference agendas and attending gerontological conferences;
- 5) Lobbying to prevent dental neglect in long-term care facilities;
- 6) Promoting mandatory continuing education on family violence for dentists, staff and other professionals; and
- 7) Placing pamphlets and other resource materials in dental offices and clinics to provide information on where at-risk seniors could obtain help.

Summary

Elder abuse encompasses physical, psychological and financial abuse, and neglect. Detection may be obstructed by denial or improper assessment of elder abuse by professionals. Working directly with homebound and institutionalized older adults is also essential. These patients are more vulnerable. If abuse goes undetected, it can interfere with any intervention and may drastically reduce their quality of life.

Further information on elder abuse may be obtained by contacting: National Clearinghouse on Family Violence, Health and Welfare Canada, Ottawa, Ontario K1A 1B5. Phone: 1-800-267-1291. For a more complete discussion on the issue of mandatory reporting, see: Gordon, R.M. and Tomita, S. The reporting of elder abuse and ne-

glect: mandatory or voluntary? *Canada's Mental Health* Vol. 38, No. 4, December 1990.

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Elizabeth Podnieks is a Professor in the School of Nursing at Ryerson Polytechnical Institute in Toronto.

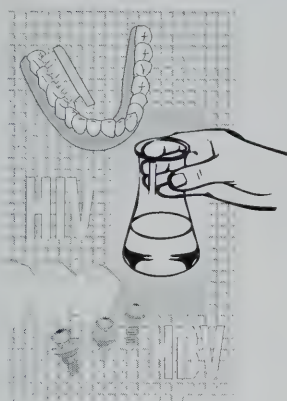
Reprint requests to: Elizabeth Podnieks, Ryerson Polytechnical Institute, 350 Victoria Street, Toronto, Ontario M5B 2K3.

References

1. Podnieks, E., Pillemer, K., Nicholson, J. et al. *National survey on abuse of the elderly in Canada*. Toronto, Ryerson Polytechnical University, 1990.
2. Statistics Canada 1991.
3. Jorgensen, J.E. A dentist's social responsibility to diagnose elder abuse. *Spec Care Dent* 12:112-115, 1992.
4. Shell, D.J. *Protection of the elderly: a study of abuse*. Winnipeg: Manitoba Association on Gerontology — Subcommittee on Protection of the Elderly, 1982.
5. McDowell, J.D. Elder abuse: the presenting signs and symptoms in the dental practice. *Texas Dent J* Feb:29-32, 40, 1990.
6. McDowell, J.D., Kassebaum, D.K. and Stromboe, S.E. Recognizing and reporting victims of domestic violence. *JADA* 123:4450, 1992.
7. Kelly, M.A., Grace, E.G. and Wiscom, C. Abuse of older persons: detection and prevention by dental professionals. *Gen Dent* 40:30-33, 1992.
8. Fetter, R., Helm, A. and Koenig, V. Elder abuse. *Gerodontology* 2:127-130, 1986.
9. Martin, W.E. and Brown, C.A. Elder abuse, Arkansas law, and dental professional responsibility, Part 2. *Ark Dent J* 60:2426, 1989.
10. Holtzman, J.M. Increasing recognition and awareness of elder abuse. *Dentistry* (Chicago) 11(4):12-14, 1991.
11. Chamy, R.D. Specialized care for older patients. *N.Y. State Dent J* 10:38-39, 1991.



FEATURE



Elder Abuse and the Dentists' Awareness and Knowledge Of the Problem — A National Survey

Laureen Mayer, BA, BRS

Douglas Galan, DMD, M.Sc.

ABSTRACT

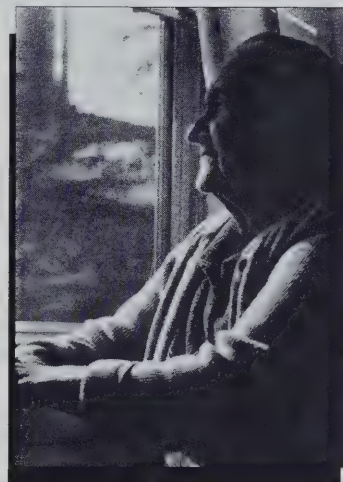
A national sample of 1,775 Canadian dentists, representing 13.2 per cent of all Canadian dentists, were evaluated via a mailed questionnaire about their knowledge, awareness of, and experiences with victims of elder abuse and/or neglect. In all, 83.3 per cent of respondents were aware, to varying extents, of elder abuse or neglect. Of the dentists observing a patient suspected to have been a victim of neglect or abuse, 40.6 per cent reported incidents of neglect, while physical abuse was seen 59.4 per cent of the time. The types of neglect most frequently observed included: neglect of personal hygiene (31.8 per cent), failure to provide adequate medical/dental care (30.2 per cent), and failure to provide adequate supervision (20.1 per cent). The most frequently reported signs of physical abuse were bruises and welts (21.8 per cent), broken denture prostheses (12.1 per cent), fractured and avulsed teeth (11.5 per cent), and abrasions and lacerations (10.3 per cent). Where abuse was observed, dentists provided dental treatment in 53.2 per cent of the cases and made emergency medical referrals in 20.3 per cent of the cases. This study demonstrates that dentists have identified

cases of abuse and/or neglect, and therefore should be consulted in the abuse/neglect identification and assessment process.

Key words: Elder abuse; elder neglect; dentist

SOMMAIRE

Dans un sondage fait au pays, on a adressé un questionnaire à 1 775 dentistes, soit 13,2 p. cent de tous les dentistes canadiens, pour les interroger au sujet des mauvais traitements et des négligences dont sont victimes les aînés. En tout, 83,3 p. cent des sondés étaient, à divers degrés, conscients de ces problèmes. Parmi les dentistes qui ont examiné des patients soupçonnés d'être des victimes, 40,6 p. cent ont signalé des cas de négligence et 59,4 p. cent des cas de mauvais traitements. Parmi les cas de négligence les plus fréquents, on a relevé: le manque d'hygiène personnelle (31,8 p. cent), le manque de soins médicaux et dentaires convenables (30,2 p. cent), et le manque de surveillance adéquate (20,1 p. cent). Et parmi les cas de mauvais traitements les plus fréquents, on a signalé: les ecchymoses et les marques de coup (21,8 p. cent), les prothèses brisées (12,1 p. cent), les



dents fracturées ou arrachées (11,5 p. cent), les écorchures et les lacerations (10,3 p. cent). Lorsqu'ils ont observé des signes de mauvais traitements, les dentistes ont effectué des traitements dentaires dans 53,2 p. cent des cas et adressé le patient à un service médical d'urgence dans 20,3 p. cent des cas. Comme cette étude a démontré que les dentistes peuvent identifier des cas de mauvais traitements et de négligence chez les personnes âgées, ils devraient être consultés à ce sujet.

Key words: Elder abuse; elder neglect; dentist



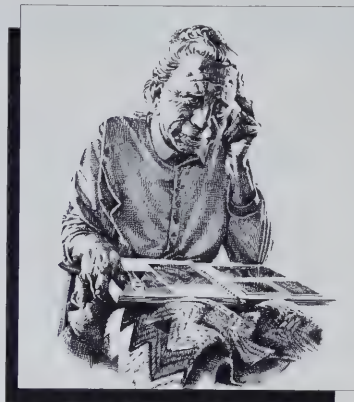
Introduction

Elder abuse and neglect is thought of as a fairly recent phenomenon — another social plight that has come to the attention of the popular press. In fact, elder abuse and neglect have deep historical roots.¹ According to historians, sociologists and other scientists, the harmonious, multi-generational family unit of yesteryear, which relied on mutual generosity and sympathy, characterized by the veneration of elders, is a myth.² In fact, historical evidence of abuse and/or neglect has been found in the form of legal documents drawn up in pre-industrial European agricultural settings. These documents ensured the retention of certain property rights, for the older person, on the transfer of their assets to the next generation. In one of these documents, the rights of the elder parent to use the front door of the house and to continue to sit at the family table were specifically outlined.²

Just as some individuals in the agrarian sector strove for legal safeguards, so too did craftsmen and tradesmen. Historically, it is generally acknowledged that older people were respected so long as they were able to contribute to their society by passing on their knowledge. Nevertheless, these people still insisted on written guarantees and regulations to ensure that their care and maintenance would not be imposed on their children.² This suggests that older craftsmen and tradesmen were suspicious that their children might not respect their rights and wishes, and that there was no carry-over of familial benevolence or veneration.²

The question that elderly people face in historical times is still being asked today: Is there value only in being economically and socially useful? Despite an unwritten respect for the wisdom of age, and the fact that most people have a sense of loyalty toward their elders, social and economic pressures continue to make this group of citizens a target of abuse and neglect.^{3,4}

In the mid-1970s, the first references to "granny bashing" appeared in the literature.^{5,6} Recogni-



tion of the problem was facilitated and focused, in part, by hearings conducted in the United States by the House Select Committees on Aging in 1981 and 1985.^{7,8} The reports emanating from these hearings began the process of clarifying and documenting the nature and extent of elder abuse in the United States. Recently, the United Nations' General Assembly adopted a "Principles for Older Persons" resolution.⁹ One of the aims of this resolution, *inter alia*, was to ensure equal access to the necessities of life, in an environment free of discrimination and abuse, for older persons. This resolution, while noteworthy, further supports the fact that elder abuse is no longer a hidden problem unique to any one society.

In February 1993, the Canadian House of Commons' sub-committee on senior citizens' health issues concluded that the key to preventing, intervening and treating abuse of the elderly was to involve everyone in breaking the silence.⁴ It is clear that the abuse of the elderly has emerged as a significant component in the overall problem of family violence in the 1990s.

Much of the early research on elder abuse was anecdotal in nature. As this research matured, there was a shift in emphasis from case studies to quantitatively oriented designs. Methodological shortcomings continue to hamper the further application of many of these studies,¹⁰ however, and comparative analyses have been hindered by a lack of consistent working definitions. Elder abuse has been variously defined to include: physical abuse; psychological

abuse; verbal abuse; denial of rights; withholding of personal care; financial exploitation; active or passive physical and/or emotional or psychological neglect.¹¹⁻¹³ Not surprisingly, research findings identifying the quantity and type of elder abuse have been somewhat inconsistent.

The frequencies of reported physical injuries have also varied widely by study. In the United States, estimates of the number of elderly individuals undergoing physical abuse range from considerably less than 50 per cent to well over 75 per cent.¹⁴ These figures vary considerably from the Canadian results published by Podnieks and Pillemer,¹⁵ who found that only 0.5 per cent of Canada's elderly population suffer abuse or neglect that involves physical violence. This recent, comprehensive study suggests that 4.8 per cent of elderly Canadians are abused in four distinct ways: material abuse (2.5 per cent); chronic verbal aggression (1.4 per cent); physical violence (0.5 per cent); and neglect (0.4 per cent).

Physical abuse involving the elderly has been reported to take, or be manifested in, several different forms: beatings; bruises and welts; sprains and dislocations; abrasions and lacerations; wounds, cuts and punctures; bone and skull fractures; burns and scaldings; freezing; and sexual abuse. Various studies have grouped these in various ways. Of the physical abuse instances reported by Block and Sinnott,¹¹ the following groupings and frequencies were observed: bruises or welts (four per cent); abrasions and lacerations (eight per cent); wounds, cuts or punctures (four per cent); bone fractures (eight per cent); skull fractures (four per cent); and direct beatings (15 per cent). By contrast, the Massachusetts Legal Research and Services Demonstration Project¹⁶ reported: bruises and/or welts (44 per cent); minor trauma including bruises, welts, cuts or punctures (34 per cent); and, skull and other fractures, dislocations, and other major injuries (seven per cent). In the only study of its kind, Potter et al¹⁷ found that of the 145 verified



cases of elder abuse reported in Connecticut in one year, 38 per cent involved head, neck and facial injuries, while 20 per cent involved injuries to the upper extremities. Based on these findings, they estimated that nearly two-thirds of all elder abuse resulted in physical injuries that could be readily identified by dentists during routine dental examinations or clinic visits.

In the Massachusetts study,¹⁶ respondents included: nurses; hospital social services personnel; home-care staff; emergency room personnel; lawyers and paralegals; and police. Block and Sinnott¹¹ collected data from: physicians; nurses; social workers; nurses' aides; senior centre staff; psychologists; and counsellors, while the study by Lau and Kosberg¹² involved social workers and public health and visiting nurses. In Canadian studies by Shell,¹⁸ Haley,¹⁹ and Girard,²⁰ similar professions were considered. These studies serve as examples of how the dental profession has all but been ignored in previous elder abuse and/or neglect research.

In the only study involving dentists, Holtzman and Bomberg²¹ evaluated the awareness of American dentists to the issues related to elder abuse. Results showed that 90.9 per cent of the sample population were aware of elder abuse and neglect, to varying extents, and that 10.3 per cent of the sample population actually knew of, or had treated, an older person suspected or known to have been abused or neglected. It was concluded, therefore, that dentists came into contact with elders suspected to have been abused or neglected more frequently than was previously anticipated.

Despite these findings, the dental community has not yet developed diagnostic criteria or guidelines that the practitioner can use to diagnose or treat victims.²¹ Recent articles by McDowell²² and Jorgenson³ have called on dentists to take a social responsibility by becoming involved in the prevention of elder abuse.

Although it is possible to identify a role for the dentist in abuse/neglect detection, there remains a

paucity of information regarding the involvement of Canadian dentists in the recognition and treatment of abuse cases involving the elderly. This study concentrated on the physical aspects of abuse or neglect, since the dentist may often be the person contacted to provide treatment for abuse related trauma to the oral and perioral structures, such as: tears of the soft tissue; bite-marks; burns; fractured or avulsed teeth; and broken or otherwise damaged dentures. The focus of this study was:

- 1) To determine the awareness and knowledge of elder abuse/neglect by Canadian dental practitioners;
- 2) To evaluate the frequency and type of elder abuse observed by dental practitioners;
- 3) To determine what treatment and follow-up action, if any, was provided by the dentist following identification of elder abuse victims; and,
- 4) To develop a list of recommendations that will improve dentists' contributions to the identification, treatment, and appropriate follow-up of elderly abuse victims.

Methodology

This study employed survey research methodologies to collect data from the Canadian dental practitioner population. Data was collected using a mailed elder abuse questionnaire — a modified version of that used by Holtzman and Bomberg²¹ in their study of U.S. dentists. A random sample of 20.7 per cent of Canadian dentists was drawn from a mailing list provided by the Canadian Dental Association. The mailing list included all Canadian dentists (13,447), broken down by province and territory. Dentists included in the study were: members and nonmembers of CDA; active status members (deleting affiliates, retired, honorary and student members); and general practice and specialty practice dentists, with the exception of pedodontists and orthodontists. Random selection from the mailing list was done using computer-gener-

ated random number procedures, weighted on national groupings, as follows:

Region	Number of Surveys Sent
Atlantic	391
Quebec	502
Ontario	895
Prairies	561
B.C. & Territories	439

Questionnaires were mailed to each subject with a postage-paid, self-addressed envelope to facilitate returns. The questionnaires solicited basic demographic information, as well as asking questions on practice size and characteristics, and whether or not the responding dentist served nursing home and homebound patients. The dentists' level of awareness and perceptions of elder abuse/neglect were also determined through survey questions. Subjects who had seen and/or treated elderly patients who had been abused or neglected were asked to provide further information by completing Part II of the questionnaire. This dealt with the characteristics of suspected abuse victims, the nature of their injuries, and the actions taken by the dental practitioner (i.e. treatment, referral, reporting to appropriate authorities, etc.).

For this report, basic statistical analyses were performed to outline the frequency distributions and measures of central tendency. In addition, some categorical variables were used to generate contingency tables with Chi-squared statistics for descriptive purposes.

Results

A total of 1,775 usable surveys were returned with an overall response rate of 65.1 per cent, representing 13.2 per cent of Canadian dentists. Respondents ranged in age from 22 to 84, with a mean age of 41.1 ± 11.6 years. The mean of years since graduation was $15.4 \pm$

**TABLE I****Awareness Of Elder Abuse/Neglect By All Respondents**

Never heard of elder abuse/neglect	16.7%
Heard of elder abuse/neglect but did not know of an incident	75.1%
Known of or suspected at least one incident	5.4%
Seen or treated at least one patient who had been abused/neglected	2.5%

TABLE II**Most Common Type Of Injuries**

Perceived Injuries (All responders)	%	Actual Injuries (Part II responders)	%
Bruises or welts	61.5	None apparent	31.5
Abrasions or lacerations	17.1	Bruises or welts	21.8
Wounds, cuts or punctures	6.0	Broken dental prostheses	12.1
Sprains or dislocations	5.4	Fractured or avulsed teeth	11.5
Bone or skull fractures	4.7	Abrasions or lacerations	10.3
Broken dental prostheses	2.0	Other	12.8
Fractured or avulsed teeth	1.3		
Other	2.0		

TABLE III**Most Common Forms Of Elder Neglect**

Perceived Neglect (All responders)	%	Actual Neglect (Part II responders)	%
Neglect of personal hygiene	45.0	Neglect of personal hygiene	31.8
Failure to provide adequate supervision	17.4	Failure to provide adequate medical/dental care	30.2
Failure to provide adequate food	14.2	Failure to provide adequate supervision	20.1
Failure to provide adequate medical/dental care	14.1	Failure to provide adequate food	10.1
Failure to provide adequate living situation	9.3	Failure to provide adequate living situation	7.3

10.4 years (range = <1-57 years). In all, 50.9 per cent of respondents practised in communities with populations of 100,000 or more. About 50 per cent of respondents were in solo practice, while a further 40.7 per cent were in multiple dentist or group practice. General dentists represented 92.7 per cent of respondents, while specialists, primarily oral surgeons, periodontists, prosthodontists, and endodontists accounted for the balance.

It was found that the practice composition of 81.8 per cent of the respondents was such that one to 24 per cent of their patients were 65 years of age or older. Of the 45.3 per cent of respondents treating nursing home patients, 62.8

per cent saw them solely in the office. Similarly, of the 23.9 per cent who treated homebound patients, 59.8 per cent saw them solely in the dental office.

Only 16.7 per cent of respondents had never heard of elder abuse or neglect, while 83.3 per cent of all respondents were aware, to varying extents, of elder abuse or neglect (Table I). Furthermore, some practitioners reported that they had seen at least one trauma case involving an older adult within the past five years, which they had not connected with possible physical abuse or neglect at the time.

The dentists' awareness of elder abuse and neglect was evaluated

by four separate questions. These questions dealt with the most common type of injury, what form of elder neglect was most common, where most incidents occur, and perceptions of appropriate actions to take. The findings comparing all responders and Part II responders are summarized in Tables II to V, respectively.

Part II of the questionnaire was completed by 128 respondents (7.2 per cent of all respondents). Of these, 40.6 per cent reported incidents of neglect, while physical abuse was seen 59.4 per cent of the time. In fact, 62.3 per cent of these cases were observed by the dentist, 13.8 per cent by hospital, clinic or nursing home staff, and 10.8 per cent were self-reported by the patient.

Individuals suspected to have suffered abuse or neglect ranged in age from 55-95 years, with a mean age of 72.3 ± 9.7 years (57.1 per cent female and 42.9 per cent male). It was suspected that 49.6 per cent of these incidents took place in the subject's home and 37.2 per cent in nursing homes. At the time of the incident, 38.9 per cent of the elders were living in nursing homes, while 19.0 per cent were living with an adult child, 17.5 per cent alone and 15.9 per cent with a spouse. The suspected abusers were nursing home or other facility staff members (34.5 per cent), an adult child (26.7 per cent) and a spouse (14.7 per cent).

The most frequent types of neglect observed or reported by the victims (referring only to neglect by a care giver, not self-neglect) were neglect of personal hygiene (31.8 per cent) and failure to provide adequate medical/dental care (30.2 per cent). Failure to provide adequate supervision (20.1 per cent), failure to provide adequate food (10.1 per cent) and failure to provide an adequate living situation (7.3 per cent) were also cited. A lack of apparent physical injuries (31.5 per cent) was the most frequently cited category under "type of physical abuse reported", followed by bruises and welts (21.8 per cent). The 128 respondents answering Part II had taken 216 actions in response to the incidents described. Over 50 per cent of

**TABLE IV****Site Where Most Incidents Would Occur**

Perceived Site (All responders)	%	Actual Site (Part II responders)	%
Private homes	66.5	Private homes	49.6
Nursing homes	31.8	Nursing homes	37.2
Hospital	1.3	Hospitals	5.4
Other	0.4	Other	4.0
		Dental clinic	3.9

these actions involved providing dental treatment to the abused/neglected individual.

Discussion

It is positive to note that 83.3 per cent of the dental practitioners surveyed had some knowledge of the elder abuse issue. This knowledge was not influenced by the respondents' age or the number of years since graduation, findings that are comparable to those of Holtzman and Bomberg.²¹ In their study, 90.3 per cent of the 1,321 respondents were aware of the elder abuse issue to varying extents. Neither this study nor Holtzman and Bomberg's analyzed responses for differences of awareness by region, community size, or type of practice. Further assessment of these variables is under way and may reveal some significant differences.

There were some differences between the injuries the respondents perceived were the result of abuse and the actual injuries they observed. As illustrated in **Table II**, dental injuries were only perceived to occur 3.3 per cent of the time, whereas in actual fact they were observed 23.6 per cent of the time. One reason for this may be that while members of the dental team would quite obviously notice dental injuries, other injuries could be covered by clothing or were not obvious to the dentist in the dental clinic environment. Such things as difficulty in sitting in a reception room or operator chair, or movement limitations in walking to and from an operator, may not always be visible to the dentist. However, other members of the dental team may notice an unusual gait; sitting difficulties; an awkwardness in removing a coat; or even hostile, overbearing or neglectful interac-

tions between family members/care givers and patients. These observations are valuable and should be brought to the attention of the dentist as potential signs of elder abuse/neglect. While not all dentally-related injuries/trauma are connected to elder abuse, dentists must be educated — during undergraduate training or through continuing education — to recognize the warning signals. If warning signals are present, a trusting relationship between patient and dentist will provide an atmosphere conducive to necessary further questioning.

Like physical abuse, the level of neglect perceived by respondents also varied somewhat from their actual observations (**Table III**). The most notable difference between perceived and actual neglect was inadequate medical and dental treatment, 14.1 per cent and 30.2 per cent respectively. This raises questions in regards to the perceived and actual medical and dental needs of older adults. Perceived and actual differences may reflect subjective values of the evaluating dentist. Balancing one's own preferences with those of another is a common difficulty in abuse/neglect research.

Both Part I and Part II respondents gave similar rankings for the locations where abuse took place (**Table IV**). Abuse most commonly occurred in private homes, probably the most difficult place to monitor. Part II results indicated that suspected abuse/neglect mostly took place in private homes or nursing homes. Dental practitioners working in these settings may

TABLE V**Appropriate Action To Take To Assist Abuse/Neglect Victims***

Perceived Action (All responders)	%	Actual Action (Part II responders)	%
Discuss with family	33.6	Emergency dental treatment	30.5
Social welfare agency referral	18.8	Regular dental treatment	22.7
Contact police	18.7	Medical referral	20.3
Emergency medical referral	8.2	Spoke to family/friends	9.3
Contact legal services	5.9	Do nothing	5.6
Contact physician	3.3	Superiors & care givers notified	3.7
Assistance from clergy	3.2	Social welfare agency referral	3.2
Emergency dental treatment	1.1	Legal authorities notified	2.3
Make further inquiries	<1	Clergy consulted	<1
Talk to patient	<1	Financial advisors contacted	<1
Do nothing/avoid involvement	<1	Patient died	<1
Contact other dentist	<1	Personally assisted patient	<1
Contact public health nurse	<1	Patient did not want to pursue	<1
Contact self-help group	<1		
Contact hospital	<1		
Speak to care giver	<1		
Discuss with institute	<1		
Speak to dental board	<1		



therefore have exposure to potential incidents of abuse/neglect.

The way in which respondents handled a suspected abuse/neglect case also varied from perceived to actual (Table V). It was most interesting to note that of the 128 responses to Part II of the survey, 216 separate actions were taken. Only 12 responses were to "do nothing," and in all cases the reason for this response is not clear. The remainder of the respondents clearly wanted to assist their patients in some way. Holtzman and Bomberg,²¹ in their American study, showed that responding dentists took similar actual actions: supplied emergency dental treatment; made a referral to a social services agency; and made an emergency medical referral. American respondents almost never informed legal authorities of abuse cases, despite mandatory reporting laws in all states and the District of Columbia. Few Canadian dentists who saw abuse cases made referrals to social service agencies.

Recommendations and Conclusions

Hutchinson and Schulman²³ suggest criteria to consider when searching for solutions to elder abuse/neglect:

- 1) Keep the individual in mind;
- 2) Keep the approach simple and positive, concentrating on the prevention of abuse;
- 3) Tailor the approach to the setting and situation.

McDowell²² suggests that there is no clear profile of the abused, therefore the dental profession must be educated about the signs and symptoms of abuse and/or neglect. Each situation is unique. Dental practitioners should sensitize themselves to the issue by becoming aware of it, but also by becoming familiar with the manifestations of the problem. By understanding the causes of abuse, dentists can increase their sensitivity to situations with the potential for abuse.³

In order to achieve this goal, we suggest several recommendations:

1) Educational information should be developed on the elder abuse/neglect issue, perhaps in conjunction with the Association of Canadian Faculties of Dentistry, so that it can be included into dental school curriculums.

2) The Canadian Dental Association and the provincial dental associations could assume a role by publishing information and research for their membership in the area of elder abuse issues. Information on the signs and symptoms of abuse, actions to take, available community resources, etc., could be actively sought on this issue and then made available to members.

3) As a profession, dentistry could develop diagnostic criteria and treatment guidelines, in conjunction with other health care providers, to enable the profession to respond appropriately to individual cases of abuse/neglect.

4) Dentists should be solicited to participate in elder abuse research to accurately specify the nature of the problem and potential solutions.

5) The dental profession, through CDA, should be consulted for input into national policy on elder abuse and neglect, and it should insist on full participation in any national dialogue on abuse and neglect.

6) A proactive awareness and prevention program should be implemented by provincial dental associations, where dentists would be required to take mandatory continuing education on family violence issues.

7) Dental office support staff should also be trained, by their own national and provincial organizations, to recognize and prevent abuse.

Overall, the 65.1 per cent response rate to the survey suggests that Canadian dentists have some interest in the elder abuse issue. The development of educational materials about elder abuse and the establishment of guidelines for the management of elder abuse cases would seem to be appropriate at this time. One could also speculate that there may be other types of abuse that present in dental offices

(such as material abuse and chronic verbal aggression), but this survey did not evaluate the broader definition of elder abuse. Additional research in this area is needed. ■

Laureen Mayer is a graduate student in the department of family studies at the University of Manitoba.

Dr. D. Galan is associated with the community dentistry programs in the faculty of dentistry, University of Manitoba.

Reprint requests to: **Ms. Laureen Mayer**, Department of Family Studies, Graduate Student, University of Manitoba, Winnipeg, Manitoba R3T 2N2.

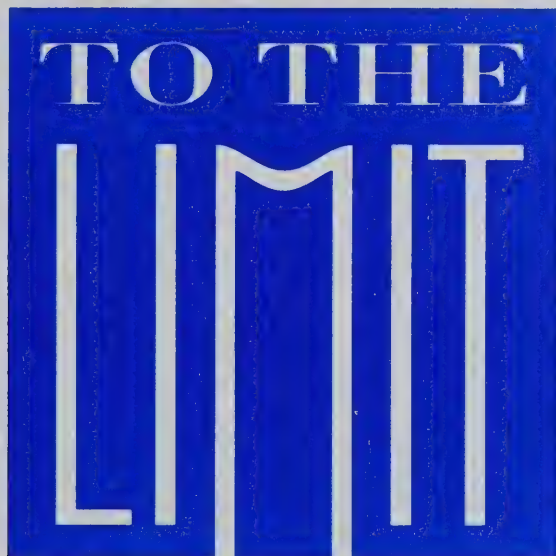
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References

1. Douglass, R. and Hickey, T. Domestic neglect and abuse of the elderly: Research findings and a systems perspective for service delivery planning. In: *Abuse and maltreatment of the elderly: Causes and intervention*. Kosberg, J.I. (ed.). Boston, Mass. John Wright/PSG Inc., 1983.
2. Council on Scientific Affairs. Council report: Elder abuse and neglect. *JAMA* 257:966-971, 1987.
3. Jorgenson, J.E. A dentist's social responsibility to diagnose elder abuse. *Spec Care Dent* 12:112-115, 1992.
4. Sub-Committee on Senior Citizens Health Issues. *Breaking the silence on the abuse of older Canadians: Everyone's concern*. Report of the Standing Committee on Health and Welfare, Social Affairs, Seniors and the Status of Women. Third session of the 34th Parliament. Ottawa: Canada Communication Group — Printing, Supply and Services Canada, No. 21, 1993.
5. Burston, G.R. Granny-battering. *Br Med J* 3:592, 1975.
6. Walsh-Brennan, K. Granny bashing. *Nurse Mirror* 145:32-34, 1977.

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7. Select Committee on Aging. *Elder abuse: An examination of a hidden problem*. Proceedings of the 97th Congress, U.S. House of Representatives. Washington, D.C., U.S. Government Printing Office, 1981.
8. Select Committee on Aging. *Elder abuse: A national disgrace*. A report by the Chairman of the Subcommittee on Health and Long-Term Care of the 99th Congress, House of Representatives. Washington, D.C., U.S. Government Printing Office, 1985.
9. UN Chronicle. *Social Development body recommends principles to protect the elderly*. June 1991, pp. 65-66.
10. Pedrick-Cornell, C. and Gelles, R.J. Elder abuse: The status of current knowledge. *Family Relations* 31:457-465, 1982.
11. Block, M.R. and Sinnott, J.D. *The battered elder syndrome: An exploratory study*. College Park, Maryland: University of Maryland, Center on Aging, 1979.
12. Lau, E. and Kosberg, J. Abuse of the elderly by informal care providers. *Aging* 299/300:10-15, 1979.
13. Rathbone-McCuan, E. and Voyles, B. Case detection of abused elderly parents. *Amer J Psych* 139:189-192, 1982.
14. Administration on Aging. *Elder abuse*. Washington, D.C. National Clearinghouse on Aging, Service Center for Aging Information, 1980.
15. Podnieks, E. and Pillemer, K. *National survey on abuse of the elderly in Canada: The Ryerson Study*. Ottawa National Clearinghouse on Family Violence, Health and Welfare Canada, 1989.
16. O'Malley, T.A., O'Malley, H.C., Everitt, D.E. et al. Categories of family-medicated abuse and neglect of elderly persons. *J Amer Geriatr Soc* 32:362-369, 1984.
17. Potter, D.E., Walker, J.C. and Katz, R.V. Elderly abuse: Potential identification of cases in dental offices. *Gerontol* 23:117, Abstr. No. 63.
18. Shell, D.J. *Protection of the elderly: a study of abuse*. Winnipeg. Manitoba Association on Gerontology — Subcommittee on Protection of the Elderly, 1982.
19. Haley, R. *A demographic survey of the incidents of elder abuse in Nova Scotia*. Halifax. Nova Scotia Department of Social Services, 1983.
20. Girard, P. Elder abuse and its impact on hospital social work. Ottawa Health and Welfare Canada, 1986.
21. Holtzman, J. and Bomberg, T. A national survey of dentists' awareness of elder abuse and neglect. *Spec Care Dent* 11:7-11, 1991.
22. McDowell, J.D. Elder abuse: the presenting signs and symptoms in the dental practice. *Texas Dent J* Feb.:29-32, 1990.
23. Hutchinson, T. and Schulman, B. Elder abuse: a patient care. *Dimensions* March:12-13, 1989.

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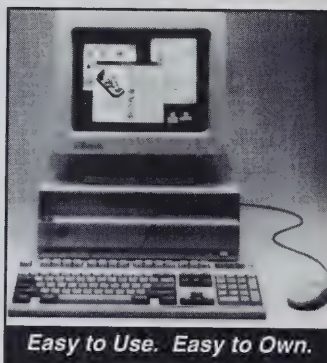
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The Glandular Odontogenic Cyst, A Rare Lesion That Tends To Recur

David G. Gardner, DDS, MSD

Rénauld Morency, MD, FRCP(C)

ABSTRACT

This article reports an example of a rare, recently reported odontogenic cyst, the glandular odontogenic cyst. It is important because it can become quite large and tends to recur if treated by curettage or enucleation.

SOMMAIRE

Cet article se penche sur un cas rare de kyste odontogène qu'on a signalé récemment : le kyste odontogène glandulaire. Il s'agit d'un important problème parce que le kyste peut devenir assez gros et revenir s'il est traité par curettage ou énucléation.

Introduction

The intent of this paper is to inform the profession of a recently described¹⁻³ and consequently relatively unknown cyst of the jaws. It has been referred to most appropriately as the glandular odontogenic cyst, but the terms mucoepidermoid odontogenic cyst⁴ and sialo-odontogenic cyst² have also been used. The glandular odontogenic cyst is important because it can become quite large and tends to recur if treated by curettage or enucleation. This article

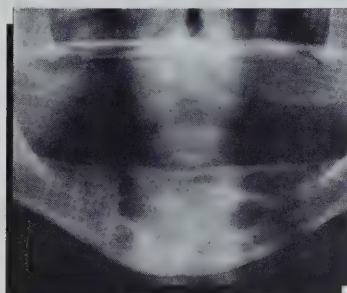


Fig. 1: Panoramic radiograph of the lesion.

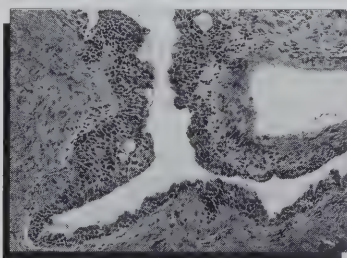


Fig. 2: Low-power photomicrograph illustrating mucus-containing crypts within the epithelium and the somewhat irregular epithelial surface often exhibited by these cysts. (Hematoxylin and eosin. x22.5).

documents an additional example to add to our knowledge of this rare lesion.

Case Report

The patient was a 46-year-old male in good health. During an examination in December 1991, prior to pre-prosthetic surgery of the maxilla, he was found to exhibit a multilocular radiolucent lesion of

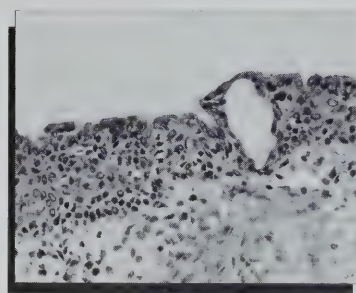


Fig. 3: Higher power photomicrograph of a field similar to that illustrated in Fig. 2. The crypt appears to be empty but most contain mucicarminophilic material. The superficial cells of the epithelium are cuboidal and eosinophilic, as are those that line the crypts. (H&E x90).

the anterior mandible (Fig. 1). The lesion was biopsied and diagnosed pathologically as a glandular odontogenic cyst. It was removed by curettage one month later. On examination in October 1992, the osseous defect appeared to be healing well.

Microscopic Description

The cyst was lined with stratified squamous epithelium that varied in thickness from two to approximately eight cells (Figs. 2 and 3). It exhibited a flat interface with the underlying connective tissue, which in turn exhibited no inflammatory cell infiltrate. The basal cells were prominent, usually cuboidal, and sometimes vacuolated. One important feature was that the superficial epithelium cells

were eosinophilic and cuboidal (Figs. 2 and 3), or somewhat flattened. However, no cilia were evident. In some areas, mucous cells were present within the epithelium. These were often related to crypts within the epithelium, which were lined with eosinophilic cells similar to those on the surface. Most contained material that stained positively with mucicarmine. One other significant feature was the presence of spherical structures within the epithelial lining (Fig. 4). Some of these extended beyond the surface and therefore gave it a papillary appearance. An occasional focus of calcified material occurred in the connective tissue just beneath the epithelium (Fig. 5).

Discussion

This lesion exhibited the characteristic histologic features of the glandular odontogenic cyst. Moreover, its occurrence as a multilocular radiolucency of the anterior mandible in a middle-aged man is typical. This example was treated by curettage, but the follow-up period is too short to evaluate the success of this treatment.

We first drew the attention of the oral pathology community to the glandular odontogenic cyst at a meeting of the International Association of Oral Pathologists in 1984,¹ although its existence had been discussed informally by oral pathologists before that. The terminology for this rare lesion is still not settled, but in 1984 terms such as unusual odontogenic cyst, sialo-odontogenic cyst, mucus-producing odontogenic cyst and pseudoglandular odontogenic cyst were suggested. In 1988 we reported on eight examples² and introduced the term glandular odontogenic cyst. The lesion is now described in the new World Health Organization (WHO) classification of odontogenic tumors and cysts⁵ as both the glandular odontogenic cyst, and the sialo-odontogenic cyst.

Including the present example, 18 glandular odontogenic cysts have now been reported.^{2-4,6} The lesions occurred over a wide age range (19 to 85 years) and in both sexes. However, approximately half of them have occurred in the

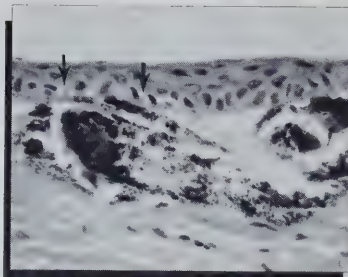


Fig. 4: A field in which the cyst lining is thinner than in Figs. 2 and 3. The basal cells are vacuolated (arrows) and there is an irregularly shaped calcification beneath the epithelium. (H&E x180).

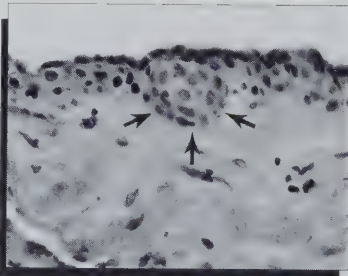


Fig. 5: This photomicrograph illustrates one of the spherical structures (arrows) that occur focally within the epithelium. (H&E x180).

fifth and sixth decades of life. Twelve patients were male and six female. The cysts also appear to have a predilection for the anterior mandible (10 of 18 cases). Radiologically, they are often multilocular, although unilocular examples occur. Eleven cases appear to have been treated by either curettage or enucleation. Of these, only eight have been followed-up for over two years. Three have recurred.

Because of the tendency for the cyst to recur after enucleation or curettage, marginal resection would be a more reliable treatment. However, curettage or enucleation can be used, provided that the clinician is aware of the cyst's tendency to recur and follows the patient closely for several years. Curettage or enucleation would not be appropriate if the lesion occurred in the posterior maxilla because of the difficulty of controlling recurrences there.

This case illustrates one other important point. While the glandular odontogenic cyst should be considered as a rare possibility in the differential diagnosis of mul-

tilocular radiolucencies of the jaws, there are several other conditions that may exhibit this appearance. These include ameloblastoma, intraosseous mucoepidermoid carcinoma, botryoid odontogenic cyst, certain other rare odontogenic tumors and central giant cell granuloma. Consequently, it is imperative to biopsy lesions such as this before definitive treatment is performed. Their true nature can only be determined by pathologic examination. ■

Dr. Gardner is a professor in the division of oral pathology and oncology at the University of Colorado School of Dentistry, Denver, Colorado.

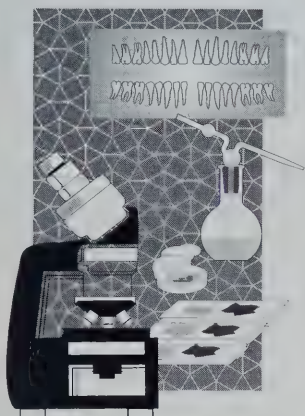
Dr. Morency is a professor in the division of oral pathology, Laval Dental School, and a staff pathologist at Enfant-Jesus Hospital, Quebec.

Reprint requests to: **Dr. D.G. Gardner**, University of Colorado School of Dentistry, 4200 East Ninth Avenue, Campus Box C284, Denver, CO 80262, U.S.A.

References

- Gardner, D.G. Unusual odontogenic cyst (mucus-producing odontogenic cyst; sialo-odontogenic cyst). Case 4, submitted by R. Morency. Proceedings of the slide seminar on odontogenic tumors and cysts. Second biennial congress of the International Association of Oral Pathologists. Noordwijkerhout. The Netherlands, June 4-7, 1984.
- Gardner, D.G., Kessler, H.P., Morency, R. et al. The glandular odontogenic cyst: an apparent entity. *J Oral Path Med* 17:359-366, 1988.
- Padayachee, A. and Van Wyk, C.W. Two cystic lesions with features of both the botryoid odontogenic cyst and the central mucoepidermoid tumour; sialo-odontogenic cyst? *J Oral Path Med* 16:499-504, 1987.
- Sadeghi, E.M., Weldon, L.L., Kwon, P.H. et al. Mucoepidermoid odontogenic cyst. *Int J Oral Maxillofac Surg* 20:142-143, 1991.
- Kramer, I.R.H., Pindborg, J.J. and Shear, M. *Histological typing of Odontogenic Tumours*. 2nd Ed. Berlin, Springer-Verlag, 1992.
- Patron, M., Colmenero, C. and Laravri, J. Glandular odontogenic cyst: clinicopathologic analysis of three cases. *Oral Surg, Oral Med, Oral Path* 72:71-74, 1991.

SCIENTIFIC



Osteosarcoma and Fibrous Dysplasia: Radiographic Features In the Differential Diagnosis: A Case Report

R.N. Bohay, DMD, MRCD(C)

T. Daley, DDS, M.Sc., FRCD(C)

London, Ont.

ABSTRACT

A case of osteosarcoma misdiagnosed as fibrous dysplasia is presented to demonstrate the importance of an integrated diagnostic approach to oral lesions. The clinical and radiographic differences between fibrous dysplasia and osteosarcoma are reviewed.

SOMMAIRE

Dans cet article, on présente un cas de sarcome ostéogénique (ostéosarcome), diagnostiqué à tort comme une dysplasie fibreuse, afin de démontrer l'importance d'une approche intégrée pour diagnostiquer les lésions buccales de ce genre. De plus, on y examine les différences cliniques et radiologiques entre l'ostéosarcome et la dysplasie fibreuse.

Introduction

Monostotic fibrous dysplasia is a benign, slowly growing lesion that most often occurs in children. It usually remains active until the end of skeletal growth, although Henry¹ reports recrudescence during pregnancy. There is no sex predilection.² It can occur in either jaw and is most often found in the molar/premolar region of the maxilla.³ In the jaws, it is usually monostotic

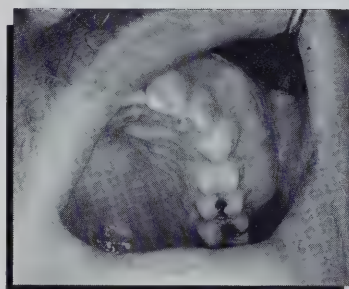


Fig. 1: Clinical appearance of maxillary fibrous dysplasia demonstrating the marked, fusiform expansion of the buccal cortex, and intact normal appearing mucosa.

and unilateral.³ Enlargement of the jaw typically appears as a relatively smooth, fusiform expansion, with the overlying mucosa being intact and normal in appearance (**Fig. 1**). Usually, the only symptom is swelling or facial asymmetry. Teeth may occasionally be displaced or prevented from erupting.

Microscopically, the lesion consists of a cellular fibrous stroma containing irregular, sometimes interconnecting, islands of bone that usually lack osteoblastic rimming. The cells do not exhibit malignant features and mitotic activity is not prominent. The lesional tissue fuses directly with surrounding bone without the formation of a fibrous capsule. Unless it is necessary for cosmetic or functional reasons, no treatment is required.

Osteosarcoma is a malignant, often fatal disease of bone that occurs more often in young adult males.^{4,5} In the jaws, osteosarcoma tends to occur somewhat later than in the long bones, usually in the third⁶ or fourth⁵ decade. The initial symptom is often asymptomatic, localized swelling that exhibits a variable growth rate. As the lesion progresses, pain, loosening of teeth, paresthesia, toothache and gingival bleeding may also occur. Microscopically, there are several variants of the malignancy. All exhibit areas of bone or osteoid associated with malignant osteoblasts or less differentiated cells. The tumors may show areas of malignant fibrous or cartilaginous tissue. Mitotic activity is usually present. The neoplasm characteristically invades into surrounding structures, often perforating cortical plates. Treatment consists of resection accompanied by chemotherapy or radiotherapy. The five-year survival rate for osteosarcoma of the jaws is reported to be 32 per cent.⁴ For tumors that are specific to the maxilla, however, the survival rate is reported to be 25.8 per cent.⁷

Both monostotic fibrous dysplasia and osteosarcoma may affect the jaw bones, producing bony swellings. Initially, both lesions may be asymptomatic, but their eventual biologic behaviors are

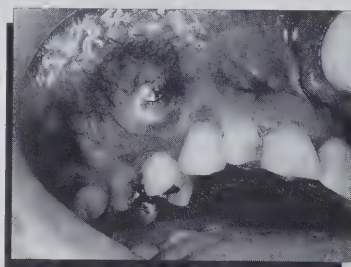


Fig. 2: Clinical appearance of osteosarcoma demonstrating the non-ulcerated mucosa and lobulated appearance.



Fig. 3: Maxillary periapical view of osteosarcoma demonstrating the "moth-eaten" poorly-delineated bone pattern and irregular widening of the periodontal ligament space about the cuspid.

dramatically different. This case report stresses the radiologic differences.

Case Report

A 36-year-old, healthy Caucasian female developed a bony, hard, 1.0 cm dome-shaped mass on the buccal aspect of the right maxillary alveolar process in the region of the bicuspid. The lesion, which was asymptomatic and clinically resembled an exostosis, was surgically excised. At age 39, the patient returned with a 2.0 cm, painless, exophytic, bony, hard mass that had occurred in the same site as the previous lesion. It was again excised, and tissue was submitted to the pathology department at a large urban hospital for microscopic examination. A diagnosis of "benign fibro-osseous lesion consistent with fibrous dysplasia" was received. Eight months later, the

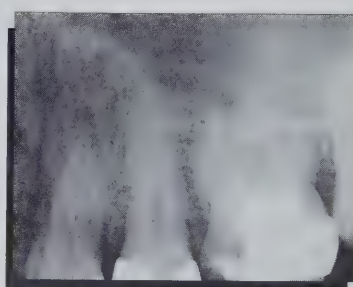


Fig. 4: Maxillary periapical view of osteosarcoma demonstrating the appearance of calcification within the altered bone pattern.

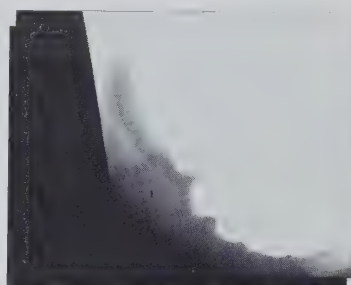


Fig. 5: Overexposed copy film of lateral maxillary occlusal view demonstrating irregular osseous spiculation extending at right angles from the buccal cortex.

lesion recurred, growing to 3.0 cm. The patient was referred to an oral surgeon for investigation. On examination, a non-ulcerated, bony, hard, bi-lobed, sessile exophytic mass measuring 3.0 x 1.5 x 1.5 cm was found (**Fig. 2**). The lesion was painless and non-tender to palpation. The teeth were not loose and there was no gingival bleeding. Clinically, the lesion did not exhibit a fusiform growth pattern typical of fibrous dysplasia, nor were the age of onset, the recurrences or the rapid growth rate consistent with fibrous dysplasia. The possibility of malignant disease was considered and the patient was referred for radiographic examination.

Periapical and occlusal radiographs were obtained. The loss of lamina dura and an irregular widening of the periodontal ligament space around the right maxillary cuspid produced a ragged, moth-eaten appearance. Areas of irregular bone destruction and small areas of irregular opacification were noted near the maxillary right cuspid and first bicuspid (**Fig. 3**). The extent and borders of the lesion

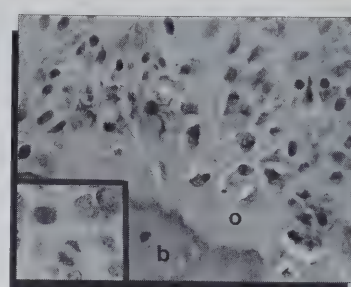


Fig. 6: Microscopically, the osteosarcoma consisted of irregular, malignant cells associated with bone (b) and osteoid (o). Mitotic activity was evident (inset). (H & E, magnification x400, inset: H & E, magnification x400).

were not well delineated. Although the teeth were not displaced, a slight resorption of the first bicuspid root was apparent. The antral floor between the roots of the second bicuspid and first molar was not clearly defined (**Fig. 4**), and the maxillary lateral occlusal view demonstrated a subtle change on the buccal aspect. This was better observed under a bright light. A copy film was overexposed to demonstrate irregular bony projections extending perpendicularly from the buccal cortex in the region of the bicuspid (**Fig. 5**). The radiographic appearance was consistent with osteosarcoma or chondrosarcoma. A periapical radiograph obtained seven months earlier demonstrated similar changes to those already described. Tissue sections of the lesion excised eight months previously were also obtained. They showed irregular islands and strands of bone and cartilage, containing and surrounded by polygonal- and spindle-shaped cells that exhibited malignant features. Mitotic figures were present in some areas (**Fig. 6**). A diagnosis of chondroblastic osteosarcoma was reached. The patient underwent a right hemimaxillectomy, followed by a course of chemotherapy (cisplatin, doxorubicin).

Discussion

Diagnosis is a clinical exercise that always requires appropriate consideration of all available information. This information is derived from the patient history, clinical findings, adjunctive test results and histopathologic findings. Often, it

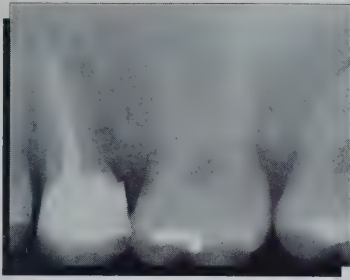


Fig. 7: Typical ground-glass appearance of fibrous dysplasia.

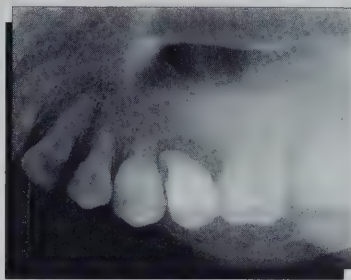


Fig. 8: Typical buccal expansion of maxillary fibrous dysplasia.

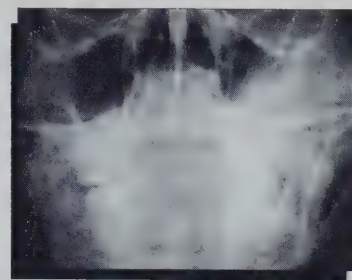


Fig. 9: Typical appearance of maxillary antrum being encroached on by fibrous dysplasia.

is the pathologist who provides the definitive tissue diagnosis. However, accurate microscopic diagnosis is often aided by patient history, clinical findings and test results. In the present case, communicating clinical and radiographic findings to the pathologist may have raised the level of suspicion of more serious disease.

Major differences in the biologic activity of fibrous dysplasia and osteosarcoma are reflected in their radiographic appearances, which vary from patient to patient. In the jaws, fibrous dysplasia typically has a homogeneous, granular, "ground glass" or "orange peel" type of appearance. Some areas of the lesion may have a "finger print" appearance (**Fig. 7**). In contrast, the internal structure of osteosarcoma may have a more variable appearance depending on the amount of bone destruction and production. Typically, irregular bone destruction is observed, producing a "moth-eaten" appearance. This may be superimposed by areas of irregular, variable-sized densities that have lost the normal appearance of trabecular bone (**Figs. 3 and 4**). The change in bone pattern may not be as obvious as in fibrous dysplasia, however, and a critical assessment of general bone pattern is required, as well as a good understanding of normal variation. The borders of fibrous dysplasia are not demarcated by either a radiopaque or radiolucent line. This often causes the lesion to be poorly delineated from the surrounding bone, although it may be quite apparent in some cases. It is usually difficult to identify the borders of osteosarcoma, and there may be areas of abnormal bone extending into areas of normal appearing

bone, producing an infiltrating appearance along bone marrow spaces. In the maxilla, fibrous dysplasia typically produces a fusiform, relatively uniform expansion with a smooth, thin cortical surface (**Fig. 8**), while osteosarcoma may rapidly perforate the relatively thin buccal cortex. Once perforation has occurred, a soft tissue mass may be identifiable beyond the normal confines of the bone. Variable amounts of irregular calcification may be seen within this mass. Irregular bony projections, classically described as "sun-ray" spiculation, may be seen perpendicular to the original cortical surface.

Occasionally, this lesion may present as a more solid, irregular mass of calcified material, extending at a right angle to the adjacent cortex (**Fig. 5**). This feature is not invariably observed (Vege et al⁸ reported it in only 32 per cent of cases), but its presence should be considered to be ominous. The effect of fibrous dysplasia on the teeth is variable. Often the teeth will appear in their usual positions. However, displacement of teeth or unerupted teeth may be seen and should not be considered unusual. Teeth that are prevented from eruption can give the clinician valuable information regarding the onset of the disorder. Displacement or impaction of teeth is not a feature of osteosarcoma. Resorption is rare,⁴ although it is apparent in this case (**Fig. 3**). Usually, the lamina dura or follicle cortex cannot be discerned in fibrous dysplasia. However, the periodontal ligament space is usually apparent unless it is obscured by the thickness of the bone. These latter two structures may reveal changes suggestive of malignant disease. Just as osteosarcoma will

rapidly destroy the buccal cortex, it can also destroy lamina dura. Neoplastic tissue may then invade the soft tissue of the periodontal ligament space, producing radiographic widening.

Finally, the effects of these two lesions on surrounding anatomical structures will differ. Fibrous dysplasia in the maxilla will often encroach on the maxillary antrum. This will produce a smaller appearing antral cavity on the affected side. Typically, the lesion will extend into the sinus from the posterior-inferior aspects and extend superiorly and medially to varying degrees (**Fig. 9**). However, the cortical boundaries of the sinus are maintained. Osteosarcoma will cause destruction of antral walls and may fill the antral cavity with a soft tissue mass that may contain calcification. In the mandible, fibrous dysplasia will occasionally cause a superior displacement of the canal, while osteosarcoma will cause destruction of canal boundaries.

Conclusion

This case demonstrates the need for an integrated approach to accurate diagnosis. Because dentists routinely expose and interpret their patients' radiographs, they must be aware of the radiographic features of aggressive disease. The ability to recognize normal, a variation from normal, and abnormality requires experience and a thorough evaluation of each radiograph exposed. General dentists must also realize that microscopic diagnosis is subject to error and often requires historical, clinical, and radiographic correlation to be accurate. ■

Dr. Bohay is an assistant professor in the faculty of dentistry at the University of Western Ontario.

Dr. Daley is an associate professor in the faculty of medicine at the University of Western Ontario.

Reprint requests to **Dr. R.N. Bohay**, Faculty of Dentistry, Dental Sciences Building, University of Western Ontario, London, ON N6A 5C1.

References

1. Henry, A. Monostotic fibrous dysplasia. *J Bone Joint Surg* 51B:300-306, 1969.
2. Regezi, J.A. and Sciubba, J.J. *Oral Pathology Clinical-Pathologic Correlations*. Toronto, W.B. Saunders Company, 1989, p. 372.
3. Worth, H.M. *Principles and Practice of Oral Radiologic Interpretation*. Chicago, Year Book Medical Publishers Inc., 1963, pp. 606-621.
4. Finkelstein, J.B. Osteosarcoma of the jaw bones. *Rad Clin North Am* 8:425-443, 1970.
5. Forteza, G., Colmefiero, B. and Lopez-Barea, F. Osteogenic sarcoma of the maxilla and mandible. *Oral Surg* 62:179-184, 1986.
6. Wilcox, J.W., Dukart, R.C., Kolodny, S.C. et al. Osteogenic sarcoma of the mandible: review of the literature and report of case. *J Oral Surg* 31:49-52, 1973.
7. High, C.L., Frew, A.L. and Glass, R.T. Osteosarcoma of the mandible. Report of a case. *Oral Surg* 45:678-684, 1978.
8. Vege, D.S., Borges, A.M., Aggrawal, K. et al. Osteosarcoma of the cranio-facial bones. *J Cranio-Max-Fac Surg* 19:90-93, 1991.

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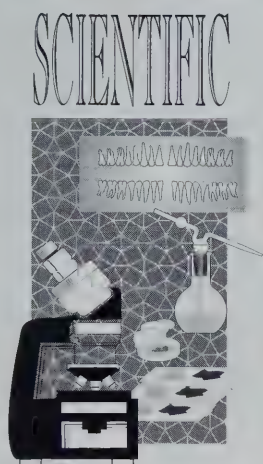
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Errors In the Diagnosis Of Oral Malignancies

John G.L. Lovas, DDS, M.Sc., FRCD(C)

Tom D. Daley, DDS, M.Sc., FRCD(C)

George E. Kaugars, DDS

John M. Wright, DDS, M.Sc.

Introduction

While the dental profession's proficiency in preventing, diagnosing and treating caries, periodontal disease, malocclusion and their sequelae (CPM&S) is constantly improving, no apparent advances are being made in early diagnosis of oral malignancies.¹⁻⁴ The medical profession appears to perform slightly worse in this area.^{1,3,4}

In a study of 4,000 oral carcinomas, Guggenheimer et al³ found that 67 to 77 per cent were greater than 2.0 cm in diameter at the time of diagnosis, suggesting delayed diagnosis. Of 68 cases of oral carcinoma that were initially mismanaged or where diagnosis was delayed by clinicians, Shafer¹ found 41 per cent to be the dentist's fault and 59 per cent the physician's. In 45 cases of "professional delay," Guggenheimer and his colleagues found dentists responsible in 42 per cent of cases and physicians in 58 per cent. In a similar study of 41 cases, Jovanovic et al⁴ found dentists responsible in 29 per cent of cases and physicians in 66 per cent.

Patient delay in seeking professional help, the presence or absence of symptoms, whether or not the lesion is thought by the patient to be tooth or denture-related, whether or not a patient sees a dentist regularly, and perhaps socioeconomic factors,⁴⁻⁷ complicate interpretation of the above statistics. One essential fact remains: there



Fig. 1: Case 1 — clinical photograph of a large, ulcerated, white tumor of the right posterior edentulous maxilla. The surface multinodularity conceals a predominantly endophytic growth pattern. At the time of this photograph, the lesion had already extended to the base of the brain.

has been no improvement in the five-year survival for intraoral carcinoma (30-40 per cent) over the past two decades.⁸

Although no correlation has been shown between delayed diagnosis and the stage of disease at diagnosis,^{3,4} it is entirely reasonable and has long been generally accepted that early diagnosis and treatment of oral cancer results in better prognosis and less morbidity.^{1,9} This paper illustrates some of the errors that occur in diagnosing oral malignancies.

Case Reports

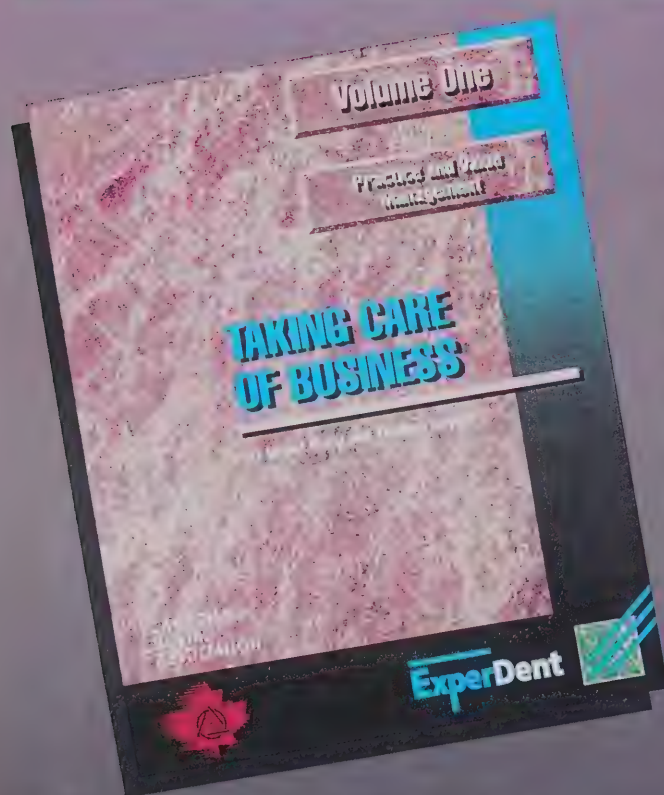
Case 1

An oral and maxillofacial surgeon performed an incisional biopsy of an asymptomatic leukoplakia of an elderly female's right posterior maxillary alveolar ridge mucosa. The pathologic diagnosis was "marked hyperorthokeratosis with mild epithelial dysplasia." There was no further treatment or follow-up.

Five years later, the patient was referred to an oral pathologist (one of the authors) for evaluation of a

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Fig. 2: Case 2 — clinical photograph of a large, deeply ulcerated, indurated nodule of the left soft palate. As a general rule, the more posterior the location of an oral carcinoma, the poorer the prognosis.

large ulcerated fungating tumor of the right posterior maxilla (**Fig. 1**). She stated that a lump had been continuously growing there for four years. It was initially asymptomatic, but now caused continuous, sometimes severe pain. A week earlier, she had also noted a "lump" on the right side of her neck. She had smoked a half pack of cigarettes per day for 50 years, but denied consuming alcohol. Biopsies revealed squamous cell carcinoma in both the ridge and jugulodigastric lymph node. The lesion of the right maxilla extended to the brain and was deemed inoperable. She refused debulking surgery and, after 3,900 rads, refused further radiotherapy due to progressively increasing pain. She died of the cancer five months later.

Case 2

For nine months, an elderly male had been seen 12 times at a dental school clinic for denture fabrication. Chart entries revealed that a palatal ulcer had been observed from the beginning, but investigation of the ulcer was only initiated after the dentures were completed.

The patient was referred to an oral pathologist (one of the authors) for evaluation of a large ulcerated mass of the left soft palate (**Fig. 2**). Based on biopsy and diagnostic imaging, a diagnosis of antral carcinoma was made. The patient was lost to follow-up.

Case 3

A young adult male was aware of a painless swelling in his right palate of about 18 months dura-

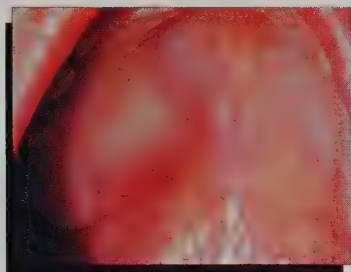


Fig. 3: Case 3 — clinical photograph of a large, diffuse sessile nodule of the right posterior palate.

tion. He denied ever having pain or toothache, injury to the area, nasal stuffiness, sinus problems or nose bleeds. Redoing an old root canal on the second molar (# 1.7) two months prior to his referral, and two courses of antibiotics did not help. A few weeks prior to his referral there was a sinus tract with drainage when pressure was applied. A gutta-percha point inserted into the tract pointed toward the midline of the palate. Teeth # 1.6 and # 1.8 tested vital. He was referred by an endodontist to an oral pathologist (one of the authors) for diagnosis.

Examination revealed no regional lymphadenopathy. The patient had a firm purplish-red, sessile, 30 x 25 x 15 mm, mucosal nodule at the right hard/soft palate junction, between the palatal midline and the teeth (**Fig. 3**). There was no sinus evident at this point. The antral floor appeared intact on periapical radiographs. He was informed that the lesion most likely was a salivary gland neoplasm, and that the chance of it being benign versus malignant was 1:1. Under local anesthetic, a deep incisional wedge biopsy was performed. Two days later, the patient was informed of the pathologic diagnosis: mucoepidermoid carcinoma. He was seen by an oral and maxillofacial surgeon one day later. CT scans revealed palatal bone erosion. An acrylic stent was made by a maxillofacial prosthodontist according to the planned surgery.

A partial hemimaxillectomy was performed. The resection margins on frozen section were "clean." The patient was fitted with the stent immediately postoperatively. He had minimal pain or swelling. He



Fig. 4: Case 4 — clinical photograph of a large, diffuse sessile ulcerated nodule of the right posterior palate/alveolus, immediately after the superior aspect was biopsied.

is free of recurrence 11 months postoperatively, and remains on long-term follow-up.

Case 4

An elderly female had a grey, hemorrhagic, fungating sessile right posterior maxillary gingival nodule of approximately 3.0 cm diameter (**Fig. 4**). For three months, her family physician "treated" it with topical steroids. She was then referred to a periodontist, who biopsied the lesion. By then, the patient had massive ipsilateral cervical lymph node involvement. The pathologic diagnosis (by one of the authors) was melanoma. The prognosis was very poor. She was lost to follow-up.

Case 5

An elderly male was referred from within a dental school to an oral pathologist (one of the authors) for diagnosis of a tender, firm submucosal nodule in the right floor of the mouth, which had been present for an unknown length of time.

There was no regional lymphadenopathy, no surface mucosal change, and no obstruction of the Wharton's duct. Sialolithiasis was ruled out radiographically. An attempted incisional biopsy was abandoned due to numerous small



bleeders and restricted visibility. An urgent referral was made to an otolaryngologist with a differential diagnosis of: "1) rule out malignant salivary gland neoplasm (e.g. adenoid cystic carcinoma); 2) benign salivary gland neoplasm; 3) sclerosing sialadinitis (cause obscure)." Due to the likelihood of a malignant salivary gland neoplasm, excisional biopsy of the right sublingual gland (under general anesthetic) was urgently recommended.

The otolaryngologist made a clinical diagnosis of chronic sialadinitis, but informed the patient that only excisional biopsy could definitively rule out malignancy. The patient elected not to have the surgery. On recall examination by another oral pathologist, 18 months later, the worrisome nodule was again noted and the patient referred to an oral and maxillofacial surgeon for biopsy. The pathologic diagnosis was adenoid cystic carcinoma. After further surgery, the neoplasm was completely excised, and the patient remains free of disease two years postoperatively.

Discussion

Despite their best efforts, even the most knowledgeable, caring clinicians, including oral pathologists, make diagnostic errors. To help improve the efficiency of cancer diagnosis, Pack and Gallo¹⁰ analyzed 1,000 random cases of malignancy, from all sites of the body, and laid the ground rules for culpability for delayed treatment. Patients were faulted for "undue delay" when three months or more elapsed between onset of symptoms and the first visit to a physician. Included was outright refusal, or delay in accepting a physician's advice ("subsequent delay"). Physicians were faulted ("open to criticism") if they committed one of five errors: a) wrong treatment — a wide variety of nonsurgical "treatments" (due to inadequate examination, incomplete operative procedures, misdiagnosis, etc.); b) wrong advice, e.g. "nothing to worry about," "nothing serious," etc.; c) no treatment, no advice; d) acceptable treatment, but delayed referral when no improvement for

a month or more; e) unable to diagnose within a month, implying observation without treatment. Patients and physicians were considered jointly responsible when combinations of undue or subsequent delay by the patient and errors by the physician were found.

An important factor in delayed diagnosis is patient delay in seeking professional advice.^{2,4,5,9-11}

General dentists diagnose a significant proportion of early asymptomatic cases of oral carcinoma^{3,4} as well as head and neck cancers in general.^{5,12} This occurs despite the fact that 50 per cent of oral cancer patients have no dentist.^{4,5} Also, most elderly edentulous patients no longer have a dentist, but tend to consult their family physician, whom they see frequently.⁶ In general, it has been shown that most oral cancer patients with symptoms consult physicians.^{4,6,7} However, dentists tend to be consulted when symptoms are assumed to be related to teeth or dentures.^{4,6}

General medical practitioners sometimes mismanage oral cancers medically: with antifungals, antibiotics, steroids and mouthwashes,^{1,6} while general dental practitioners tend to mismanage surgically or by using some other mode of physical "treatment," such as extraction, periodontal treatment and denture adjustment.^{1,2}

North American dental students receive extensive training in CPM&S-related subjects, and typically have over 150 hours of oral pathology and oral radiology lectures, clinicopathologic conferences and clinical exposure to non-CPM&S oral diseases. Though in general practice, dentists seldom deal with non-CPM&S oral diseases, they have a solid background in the area, and are the ultimate experts in the clinical/radiographic diagnosis of the far more common CPM&S diseases.¹³

Clearly, the general dental practitioner should be the first health professional to be consulted with regard to oral conditions in general. If the general practising dentist rules out CPM&S, he or she should refer the patient to an oral pathologist or an oral and maxillofacial surgeon. ■

Dr. Lovas is an associate professor of oral pathology in the faculty of dentistry, Dalhousie University.

Dr. Daley is an associate professor of oral pathology in the faculty of dentistry, University of Western Ontario, London, Ont.

Dr. Kaugars is a professor of oral pathology in the Medical College of Virginia, Virginia Commonwealth University, Richmond, Virginia.

Dr. Wright is a professor of pathology, Baylor College of Dentistry, Dallas, Texas.

Reprint requests to **Dr. Lovas**, Faculty of Dentistry, Dalhousie University, 5981 University Ave., Halifax, N.S. B3H 3J5.

References

1. Shafer, W.G. Initial mismanagement and delay in diagnosis of oral cancer. *JADA* 90:1262-1264, 1975.
2. Scully, C., Malamos, D., Levers, B.G.H. et al. Sources and patterns of referrals of oral cancer: role of general practitioners. *Br Med J* 293:599-601, 1986.
3. Guggenheimer, J., Verbin, R.S., Johnson, J.T. et al. Factors delaying the diagnosis of oral and oropharyngeal carcinomas. *Cancer* 64:932-935, 1989.
4. Jovanovic, A., Schulten, E.A. and van der Waal, I. Referral pattern of patients with oral mucosal lesions in the Netherlands. *Commun Dent Oral Epidemiol* 20:94-96, 1992.
5. Pogrel, M.A. The dentist and oral cancer in the North East of Scotland. *Br Dent J* 137:15-20, 1974.
6. Cooke, B.E.D. and Tapper-Jones, L. Recognition of oral cancer — causes of delay. *Br Dent J* 142:96-98, 1977.
7. Amsel, Z., Strawitz, J.G. and Engstrom, P.F. The dentist as a referral source of first episode head and neck cancer patients. *JADA* 106:195-197, 1983.
8. Brady, L.W. The state of the art in head and neck cancer management. *Semin Oncol* 15:1-102, 1988.
9. Robbins, G.F., Conte, A.J., Leach, J.E. et al. Delay in diagnosis and treatment of cancer. *JAMA* 143:346-348, 1950.
10. Pack, G.T. and Gallo, J.S. The culpability for delay in the treatment of cancer. *Am J Cancer* 33:443-462, 1938.
11. Love, N. Why patients delay seeking care for cancer symptoms. What you can do about it. *Postgrad Med* 89:151-152, 1991.
12. Adams, R.J., Pullon, P.A. and Lee, F. Expanding the role of the dentist in the detection of oral and laryngeal cancer. *JADA* 89:607-610, 1974.
13. Lovas, J. and Wysocki, G. The dentist's role in detecting lesions which mimic common dental conditions. *JCDA* 51:689-692, 1985.

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Are you interested in an exceptional dental opportunity? Welcome to **Red Deer**, a growing family and college oriented community situated between Edmonton and Calgary. Well established, busy, computerized, **Periodontal Practice** for sale, or locum considered. Excellent staff, fully-equipped operatories with all modern equipment. This warm, beautiful Victorian style office is located downtown overlooking the city park. Owner returning for postgraduate training, willing to assist in transition. Please call **(403) 346-9122 (O), (403) 346-9585 (H), (403) 341-6969 (Fax).** (07/11)

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Gross professional fees of \$575,000 - \$625,000 plus hygiene fees of \$225,000 - \$240,000 per annum. This practice shares joint costs with two other dentists resulting in net income between \$440,000 - \$520,000 per annum (past four years).

For more information contact:

C. Robertson, CA

BDO Dunwoody Ward Mallette

#1500, 800 - 6 Ave S.W.

Calgary, AB T2P 3G3

Phone: (403) 531-0531 (09/11)

SASKATCHEWAN: Large family practice for sale in mid-size Saskatchewan city. Several operatories and X-rays and panelipse, low overhead. Very reasonable, anxious to sell due to health reasons. Please reply to CDA ACCESS Box 2588. (08/13)

SASKATCHEWAN - Saskatoon: Dental practice for sale, downtown long-established busy practice, excellent staff including hygienist, two therapists. Flexible terms. Call (306) 373-5227 or respond to CDA ACCESS Box 2596. (10/12)

MANITOBA - Northern Region: General practice for sale. Asking \$90,000, high gross \$375,000, 90% of patients are insured. Office has three operatories, panorex, low overhead, nearest dentist if over 200 km away. Region offers a good school, great fishing, golfing, hunting etc. Respond to CDA ACCESS Box 2597 or phone (204) 275-0122. (10/12)

MANITOBA: Very busy general practice in large town, rural Manitoba, modern office, good growth, ideal for two dentists. Owner returning for postgraduate training, willing to assist in transition. Please reply to CDA ACCESS Box 2566. (04/11)

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ONTARIO - Thunder Bay: Well established family practice for sale. Prime location in Thunder Bay. Fully-equipped five-chair clinic with outstanding staff support. Nitrous-oxide sedation, Panoramic X-ray, superior leasehold improvements. High volume with exceptional net. Excellent opportunity for experienced dentist or ambitious new graduate. Detailed report available (financing is available if required). In confidence, please call; Dr. B.P. Zmiyewsky (807) 344-0605. (10/12)

ONTARIO - Oakville: Finished dental office space, immediate occupancy, 811 or 1,622 sq. ft. New building in prestigious central location. Previous use as modern dental office layout. Low set-up and renovation cost. Phone: (416) 844-6111 or (416) 338-0001 (evgs). (09/11)

ONTARIO - London : One year's free rent! Offered by The Thorndale Lions Medical/Dental Center for a dentist to start his or her own dental practice. Situated in a modern (five-year-old) medical/dental building 15 km north-

east of London. Contact Paul Massey, R.R. #3, Thorndale, Ont. N0M 2P0, (519) 268-3027. (09/11)

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NOVA SCOTIA - Halifax: For Sale - Well established family practice located in historic Hydrostone market, computerized, efficient Kavo equipment and excellent growth potential. Contact Bill Tingley at (902) 835-1103. (11/13)

NOVA SCOTIA - Halifax: Solo practice for sale due to retirement, \$85,000. Located in south-end district. Includes three operatories, vendor will assist with financing - terms available. Call (902) 443-2195 or reply to CDA ACCESS Box 2598. (10/12)

NOVA SCOTIA - Annapolis Valley: Practice for sale in Nova Scotia Annapolis Valley. Very busy family practice, 1,200 sq. ft. office in a medical/dental professional centre. Ultra-modern dental set-up, good gross,

priced to sell. For more information call (902) 245-5666. (04/13)

Positions Available/Sought

BRITISH COLUMBIA - Vancouver: Associate wanted three days a week. Hard working personable, salaried at \$50,000 per year for two-year term, after which a partnership/buyout potential exists. A dentist with two to four years general practice experience is preferred. Please send covering letter and resume to CDA ACCESS Box 2599. (10/12)

BRITISH COLUMBIA - Nanaimo: Excellent opportunity for an associate/partnership in the "Hub City" of Vancouver Island. Nanaimo is experiencing fantastic growth. A fabulous lifestyle (world class fishing, hiking, windsurfing - you name it), and still reasonable real estate prices. If your future is important to you call (604) 756-1200 (day), (604) 756-1082 (eve). (11/01)

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(604) 398-7161 (O), (604) 392-2615 (H), (604) 398-8633 (Fax).

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(07/13)

ALBERTA - Edmonton: Wanted (IMMEDIATELY!) associate for busy prosthodontic practice. Potential for buyout. The vendor will stay on to help with the transitional period. Please call (403) 452-9005 or write CDA ACCESS Box 2602 for more information. (11/01)

ALBERTA - Slave Lake: Seeking associate dentist for a busy general practice 248 km north of Edmonton. Excellent remuneration. Great outdoors include: fishing, hiking, golfing, water-skiing and suntanning. Please call Marina Maunder at (403) 849-4477, Fax (403) 849-6332. (09/11)

ALBERTA - Edmonton: Full-time and/or part-time dental associates required immediately for busy enclosed mall practice, must be willing to work some evenings and weekends. Contact Dr. Ken Quon (403) 466-9889 or please respond to CDA ACCESS Box 2591. (09/11)

SASKATCHEWAN - Regina: Seeking dental associate for modern office in large medical/dental facility. Good opportunity for the right person. For details call Dr. Ronald Katz, (306) 924-1494, or write to: 235B Albert Street N., Regina, Saskatchewan S4R 3C2. (08/11)

SASKATCHEWAN - Regina: Associate wanted, starting Nov. 1, 1993, buy-in option after one year. Contact Laurie (306) 522-6219. (09/11)

MANITOBA - Northern Region: Associate wanted for general dental practice. Three operatories, panorex, 90% of patients are insured, "salary is negotiable". Region offers a good school, great fishing, golfing, hunting, etc. Respond to CDA ACCESS Box 2600 or phone (204) 275-0122. (10/12)

YUKON TERRITORY - Whitehorse: One third interest in long standing group practice. Opportunity to associate for a few months to see and experience the practice. For further information contact Dr. C.R. Pugh, 50 Firth Road, Whitehorse, Yukon Y1A 4R6 (403) 667-2489, (403) 667-4486. (11/01)

ONTARIO - Scarborough: Oral and maxillofacial associate required for well established practice in Scarborough, Ontario with the option for a partnership within one year. Please respond to CDA ACCESS Box 2592. (09/11)

ONTARIO - Deep River: Partnership available with busy family practice. Contact Dr. Vantomme (613) 584-2768 (W), or (613) 687-6859 (H). Two hours east of North Bay, two-and-a-half hours west of Ottawa. (08/12)

ONTARIO - Windsor: Associate wanted, long-term, great opportunity for a dentist who likes flexible hours, modern equipment, panorex, and avoiding the headaches of running a business. Call (519) 974-6120 or (519) 979-1371, ask for Gabe, Fax (519) 974-6121. Send resume with photo to: 7651 Tecumseh Road E., Suite #204, Windsor, Ontario N8T 3H1 (11/01)

ONTARIO - Ottawa: Dental associate wanted. Progressive multi-disciplinary group practice, potential partnership. Contact Dr. Gunther (613) 236-4557. (06/11)

ONTARIO - PETERBOROUGH

Full time associateship available immediately. We are seeking a highly motivated individual to join our dental team. We have a group practice with a friendly, hard-working support staff. The practice is fully computerized with modern equipment. Patient flow is excellent and we practise in all areas of Dentistry. Peterborough is a friendly sports-minded community located in the beautiful Kawartha lake district. We are seeking an individual with long-term interest. *Call daytime*
(705) 749-0133, evening (705) 745-9632. (11/01)

ONTARIO - Niagara-on-the-Lake

Solo practitioner, with successful leading edge practice facility in Niagara-on-the-Lake, Ontario, searching for an outstanding senior dentist to join this progressive periodontal prevention team. If you are confident, caring, skilled and loveable, we would like to chat with you. Flexible hours, motivating environment and no management hassles. **Please call Anne (416) 468-2128. (10/11)**

QUEBEC - Beaconsfield: Full-time associate required for a dynamic family practice in Beaconsfield (Montreal). Leading to partnership, this is an excellent opportunity for a motivated dentist. Owner would like to reduce hours and will be on maternity leave from December 1st, 1993 to March 31st, 1994. Please contact Dr. Anne Weary (514) 694-1761. (09/11)

QUEBEC - SHERBROOKE

Exceptional opportunity for prosthodontist to join a well established prosthodontic practice of the highest quality for eventual transfer and sale. Call **Dr. Roger P. Masella, (819) 566-0161 or write to: 1855 Portland, Sherbrooke, Quebec J1J 3V7. (10/12)**

NEW BRUNSWICK - Moncton: Purchase/associate opportunity. Located in one of the largest malls in Atlantic Canada. Recently redecorated and equipment upgraded. Computerized, Pan & 90s Sterilization, 40 new patients per week, high gross. Well organized office and Hygiene department. Suitable for one or two dentists. Contact: Craig Aisthorpe (902) 452-1662 or respond to CDA ACCESS Box 2593. (09/11)

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BRITISH COLUMBIA - Whistler: For rent, three bedroom luxury condo at base of Blackcomb, sleeps up to eight. Walk to lifts and village. Please contact Dr. Bruce Clarke (519) 886-8980. (09/11)

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Meetings & Announcements

FEBRUARY 19-21, 1994 3rd ANNUAL WHISTLER DENTAL SEMINAR

Delta Mountain Inn, Whistler, B.C.
For information contact: Vancouver
Chapter of Alpha Omega Fraternity,
Louise Huber (604)278-9877 (09/12)

MAY 27th - JUNE 1st 1994 ALBERTA DENTAL ASSOCIATION PROVINCIAL DENTAL CONVENTION

will be held at the Banff Springs Hotel in
Banff, Alberta. For registration or
information contact :
Dr. B. Yaholnitsky, 370 - 202 - 6 Avenue
S.W., Calgary, Alberta, T2P 2R9 (11/05)

CLASS REUNION 5T4 GRADS! 40th Class Reunion

to be held at the
Holiday Inn Crowne Plaza
(formerly L'Hotel) - Toronto, Ontario
on April 24, 1994.

For more information call
Dr. Jack Simpson

(416) 767 - 4151 9 am - 5 pm. (11/11)

THE 17TH ANNUAL FLORIDA MEDICAL, DENTAL, LEGAL AND PODIATRIC SEMINAR

Place - Embassy Suites Hotel
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Dates - Dec. 19, 1993 - Jan. 2 1994

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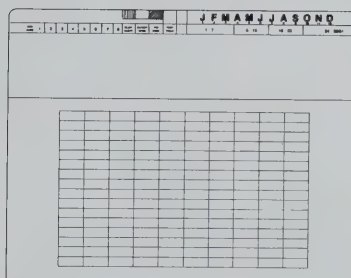
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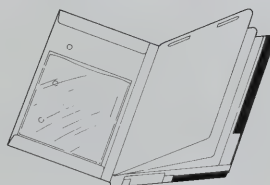
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1994**

82ND WORLD DENTAL CONGRESS · VANCOUVER OCTOBER 2ND TO 8TH, 1994

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Cooperation and Hard Work are Paying Off!



Never in all my years of convention planning have I dreamt of an exhibit hall completely filled one year in advance of the event. But, that is exactly what has happened for the FDI 1994 Congress to be held in Vancouver, Canada next October 2 - 8, 1994. The cooperation from the dental industry and the hard work put forth from the FDI '94 Committee and Staff have made this dream a reality. The

proposed exhibit space has been filled and we are opening a second area to meet the demand! This second area will also be located in the Vancouver Trade and Convention Centre and situated near the registration desks where there will be a steady flow of traffic.

The exhibit hall is not the only portion of the FDI '94 Congress that is filling up fast. The scientific program has been received with much enthusiasm. As well, the hands-on courses, limited attendance sessions and live television presentations are generating a lot of interest and we are receiving registrations daily. Much of this movement has come from Western Canada, where many dentists have heeded the call of urgency and sent in their own registrations and those of the members of their dental teams. The Canadian dentists are excited about welcoming their international colleagues from around the world and are preparing now to participate.

The dental hygienists' program for the FDI '94 Congress augurs well. The program will be a tremendous opportunity for all hygienists to update and improve their skills as well as meet their fellow professionals from around the world. The efforts of Ms. Debbie McCloy and of the British Columbia Dental Hygienists' Association have been a great asset in helping us develop an exceptional program to meet the needs of all hygienists.

The dental assistants' program has evolved nicely and will be a wonderful experience of learning and sharing for dental assistants wishing to enhance their abilities. The efforts and dedication of Ms. Lane Shupe and of the Certified Dental Assistants' Association of British Columbia have helped to solidify an appealing assistants' program.

Hotel accommodations are also going fast. Many requests for room reservations have been received!

The Congress is now less than a year away. I urge you to take full advantage of the many events being offered at FDI '94. Avoid disappointment and send in your reservations NOW. Register early – don't miss out!

Michel Jahjah, D.D.S.

General Chairman

FDI 1994 Organizing Committee

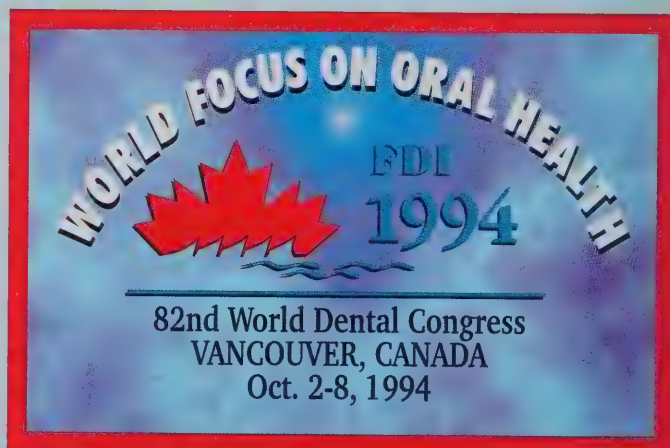
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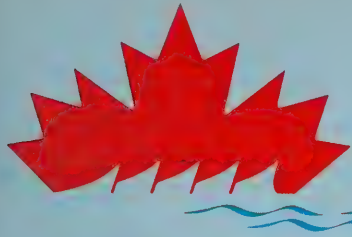
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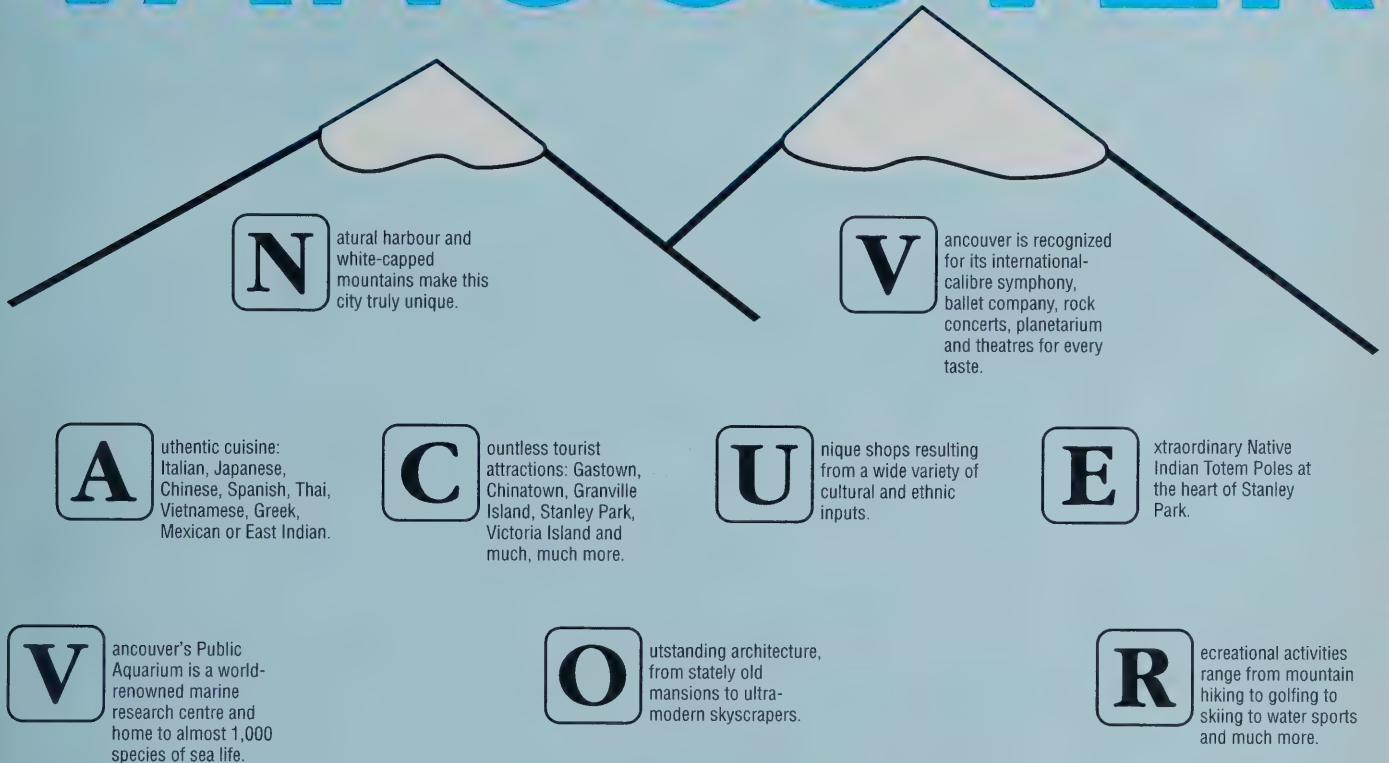




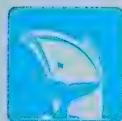
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82nd World Dental Congress
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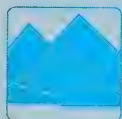


Pre and Post Congress Tours FDI '94



ALASKA (September 24 - October 1, 1994)

A memorable 7 night cruise to Alaska aboard Holland America's M.S. Westerdam. Heading up the inside passage, enjoy many delightful ports of Ketchikan (Alaska's first city), Juneau (Alaska's capital) and Glacier Bay (where the mighty glaciers will take your breath away). A trip of a lifetime!



CANADIAN ROCKY MOUNTAINS (October 8 - 11, 1994)

See the wonders of the Canadian Rocky Mountains on this 4 day/3 night train and bus excursion. Travel through spectacular scenery during the day and enjoy comfortable hotel accommodations at night. You will see a wide variety of wildlife and natural attractions that Alberta and British Columbia have to offer; including the wonderful destinations of Jasper, Banff and Lake Louise.



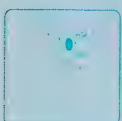
HAWAII (October 7 - 14, 1994)

Enjoy a fabulous 8 day/7 night vacation in Hawaii on the island of Oahu. You can stay at the Hilton Hawaiian Village or at the Pacific Beach Hotel, both situated on the beautiful Waikiki beach. A perfect tour for those wishing to relax and enjoy the magnificent view of Hawaii.



LOS ANGELES (October 10 - 13, 1994)

Enjoy a marvelous 4 day/3 night cruise aboard Holland America's M.S. Westerdam from Vancouver to Los Angeles along the Canadian and U.S. coast. Since the cruise departs on October 10th, this is the perfect tour for those wishing to do some post-conference sightseeing in Vancouver.



AUSTRALIA AND NEW ZEALAND (October 7 - 21, 1994)

An incredible 15 day/14 night post-conference tour "down-under". In Australia, visit Cairns, the great Barrier Reef, the rain forests, Sydney, the Blue Mountains and go on a wine tour. In New Zealand, see the Coromandel Peninsula and Rotorua thermal springs. You will also have the opportunity to stay either on a sheep, kiwi fruit or cattle farm for two nights. Each farm will host 2 couples from our group – a sure way to enjoy local New Zealand hospitality. From here, optional stopovers for 4 days/3 nights in either Fiji or Hawaii.

The Canadian Dental Association Out-of-Country Seminars

ISRAEL (February 16 - 28, 1994)

In collaboration with the Israel Dental Association

This unique 13-day tour to Israel takes you to the modern metropolis of Tel-Aviv and into the ancient ports of Jaffa, Acco, Haifa and Caesarea. You will travel through the lush region of Galilee to admire Mount Hermon. You will also visit the Dead Sea. Finally, you will ascent to Massada, the last stronghold of the Jewish Zealots against the Romans, standing as a memorial to this day.

TURKEY (April 15 - 28, 1994)

In collaboration with the Turkish Dental Association

This unforgettable 14-day journey will take you to the former Ottoman Empire as well as to the modern city of Istanbul. Your voyage will let you discover ancient marble temples built in honor of the gods and stirring architecture reminiscent of times long past. Pammukkale, Ankara, Cappadocia, Antalya, Kusadasi and Ephesus are among the numerous sites that you will enjoy on this unforgettable trip.

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IT'S MY OPINION

WOMAN ABUSE IS EVERYBODY'S ISSUE



Joan Gillespie, MSW, CSW

The abuse of women by their partners is not a new problem in Canada, but it is one that is no longer hidden. Almost daily, the media carry horrifying reports of women being harassed, terrorized, stalked, raped, shot or killed.

Even with our growing awareness of the enormity and the severity of the problem of violence against women, many people feel there is nothing that they can do, as individuals, to make a difference. Too often, abuse against women is seen as something that happens to other people's wives, other people's daughters, and other people's friends or colleagues. Often, even when we really want to help, we are held back by our fear of interfering in "private family matters" or saying the wrong thing. The challenge we all now face is to find ways to actively and effectively get involved in what has been described by one parliamentary committee as a "war against violence."

As members of the dental profession, you have a particular role to

play. The first step is to increase your understanding of the problem and its impact on your life, both personally and professionally. This issue of the *Journal*, with its theme of family violence, is an excellent awareness building tool. Videos are another important resource. For example, *Without Fear*, a 25-minute video produced by the Canadian Panel on Violence Against Women, gives an excellent overview of the key issues and highlights the impact of abuse on five women's lives. It is distributed nationally through the National Film Board.

Gaining an awareness of the abuse indicators for women is another important step for dentists, dental hygienists, therapists and assistants. The booklet *Family Violence: Clinical Guidelines for Nurses* highlights some of the important abuse indicators that health care providers should be familiar with, including: injuries to bone or soft tissue; lacerations to the head or face, hair loss, broken teeth, fractured or dislocated jaw, and black eyes. Other abuse indicators include depression, insomnia, financial difficulties or delay of treatment, to name a few. On their own, none of these indicators prove that a woman has been abused, but they should alert health care providers to that possibility.

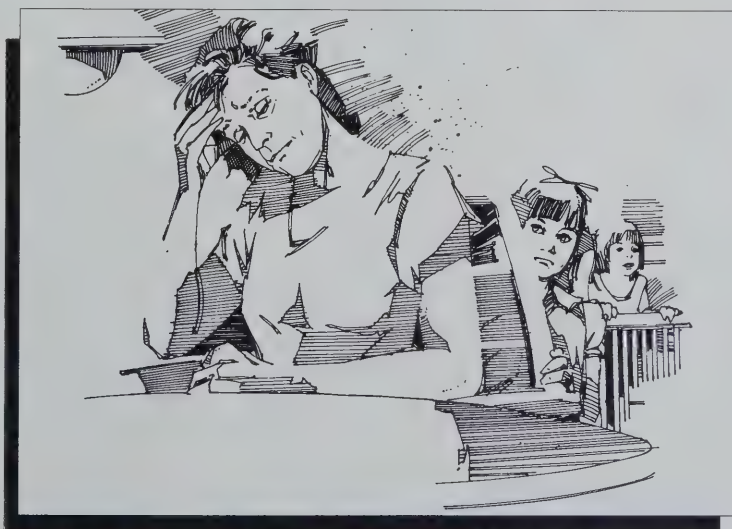
Asking questions about abuse on a routine basis is one of the positive steps that many health care providers have already taken. Women who

have suffered abuse are often too ashamed or too scared to mention their abuse to anyone. Many survivors who strongly denied their abuse at first now say that having someone actually raise the issue with them was a turning point. All of a sudden they knew that the nurse or doctor understood the abuse issue, was comfortable talking about it, and would be a source of helpful information if and when the victim decided to act.

Many health care providers are afraid that if they ask questions about abuse, then they will also be expected to solve the problem. This is not true. There is no single or simple solution to wife or partner abuse, and each abused woman's plan of action will be unique to her. What we can do as professionals is to give victims a clear message about abuse:

- violence is never okay or justifiable
- the safety of a woman and her children is always the most important issue
- wife assault is a crime
- the woman did not cause the abuse and is not to blame for her partner's behavior

We can also explain that there are key resources for abused women in the community, and tell victims how to contact them. Even so, many women will never reveal the abuse that they live with in their personal lives to their health care providers. Having articles on violence against



JOURNAL

November/
Novembre
1993
Vol. 59
No. 11

women as well as information pamphlets and telephone resource numbers readily available in your reception area is an important way to reach these women. The staff at your local transition house or shelter can help you put together a good collection. The resource materials identified throughout this article are also filled with practical suggestions on ways to educate and build awareness.

Abused women are not confined to your patients or clients, they are just as likely to be your colleagues. Recognizing wife abuse as an issue that strongly impacts on the workplace is a new idea for many professions. We are so attuned to helping others that we often forget to help ourselves. A study conducted in 1992 by Donna Denham and myself confirmed this fact, and led to the development of a practical guide: *Wife Abuse — A Workplace Issue: A Guide for Change*. The

guide is intended to provide employers with the kind of practical resources, training ideas and understanding of the abuse issue — based on women's experiences — that will be required if they are truly committed to ending violence against women.

All of us need to ask ourselves what we can do to support abused women, and work to create organizations that refuse to condone violence against women. No one person, organization or profession can do it alone. Working together we can make a difference. ■

Joan Gillespie is a policy associate for the Family Violence Program, Canadian Council on Social Development, Ottawa. *Vis à Vis*, a national newsletter on family violence, is produced quarterly by the program, and contains useful resources for health professionals.

Resource Information

• *Family Violence: Clinical Guidelines for Nurses*

• *Wife Abuse — A Workplace Issue: A Guide for Change*

Available in English and French, free of charge, from:

National Clearinghouse on Family Violence, Health Canada, Ottawa K1A 1B5. Tel: 1-800-267-1291; Fax: 1-613-941-8930; TDD Line: 1-800-561-5643.

• *Without Fear*

Video collection, National Film Board of Canada

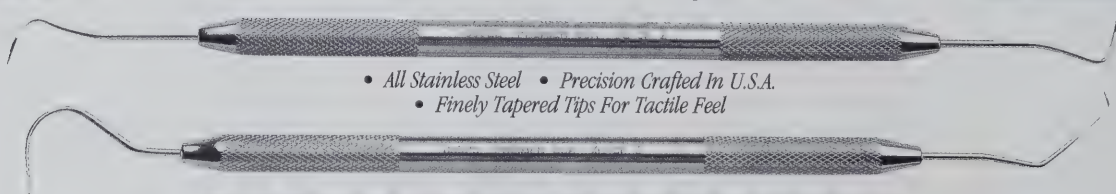
• *Vis à Vis*

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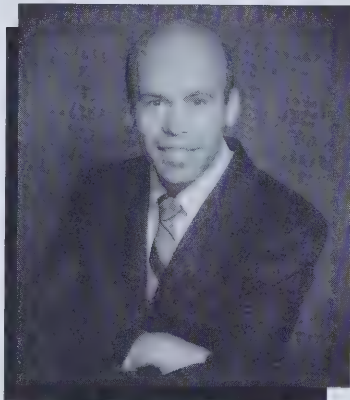
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GUEST EDITORIAL

EVERY PERSON NEEDS A REA- SON TO JOIN



Dr. Bruce Warwick

In 17 years as a practising dentist in a small community, I have never served my provincial or national dental associations as a member of a committee, council or board. Like many dentists, I pay my dues to CDA and my provincial association, confident that someone else will keep the big picture of organized dentistry properly focused on my behalf.

No, I'm not asleep. I know that many of my fellow dentists willingly volunteer their free time to keep our profession unified and organized. And I know there is a never ending list of new problems to solve, and that government, at all levels, does not always have the best interests of dentists in mind.

But my days seem awfully busy, and as long as someone else is looking out for the interests of the profession, I prefer to concentrate on keeping my own affairs in order. This is my major excuse for not actively participating in organized dentistry.

I should also state, however, that I'm not really interested in serving my profession at an executive level. I don't feel a compelling need to play a leadership role, or to achieve success in the dental political arena. But I am extremely thankful

that there are dentists who are interested enough to actively serve.

Most of us know about all the good things that CDA does for us as individual dentists and for the profession as a whole. We know that CDA provides continuing education courses, recognizes new materials, promotes dental health care and produces a scientific journal. CDA also offers, through Canadian Dental Service Plans Inc., a full range of insurance programs that have been tailored to meet the needs of today's dentist. I could talk about all these issues, and more, but that's not my intent.

Frankly, I suspect that you already know as much about what CDA does on your behalf as I do, if not more. The problem is that this knowledge seems to have very little impact on us. Even though we all know that CDA's many achievements benefit us directly (look how they saved us on the GST), we don't seem that interested in contributing our time, energy or money to the cause. Perhaps that's because the good things always seem to be achieved regardless of whether we, as individual dentists, have contributed membership fees to our national and provincial dental associations. Look how good dentistry has been to us.

At this point, you might be wondering why I am offering this true confession, which only singles me out as someone who could do more for his profession. The answer is simple. While I am aware that my past history does not paint a picture of someone who is a particularly useful asset to his national association, I know that I do not stand alone. There are a whole bunch of us card-carrying CDA members out there who don't do a great deal to help dentistry.

But at least, and this is the point, we aren't doing anything to hurt dentistry either. Because, if nothing else, we are still paid up members of CDA! Dentists who have made a fair and reasonable financial contribution toward the services and programs provided by their national association.

It is beyond my understanding how any dentist in this country, knowing the political climate we

live in, can not belong to both CDA and their provincial association. We have only one line of defense in dealing with government, and it is our national and provincial dental associations.

As I was writing this pro-membership editorial, it occurred to me that some dentists may not truly understand the consequences of not joining CDA. Well here it is. If CDA membership in Quebec and Ontario continues to grow at current levels, the day will come when CDA no longer represents a majority of the dentists in Canada. And if that happens, the association will no longer be "the authoritative national voice, resource and focus of unity for the profession of dentistry in Canada."

Think about it. Now, more than ever, we all need to offer our support and resources to organized dentistry (I'm talking membership numbers and money) to keep government at both levels from restructuring our profession into a form they can control and manage.

Everyone knows the financial plight Canada is in today, and that health care costs in this country may require some containment. Politicians crave votes. If they perceive that the public will support a policy of reducing Canada's deficit at the personal expense of dentists and physicians, legislation to that effect won't be far behind.

Whether or not you care about the many important initiatives that CDA undertakes on your behalf each and every day, there is no question that you care about maintaining professional independence and control of your practice.

Let's not allow our autonomy to be eroded. Let's support our national dental association in any way we can, including membership. CDA is the organization that speaks for our own interests and those of the public. If you don't remember anything else from this editorial, remember to join the CDA this year in your own best interests.

Bruce Warwick, DDS
Chatham, Ontario

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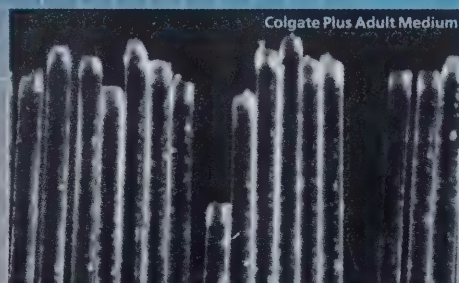
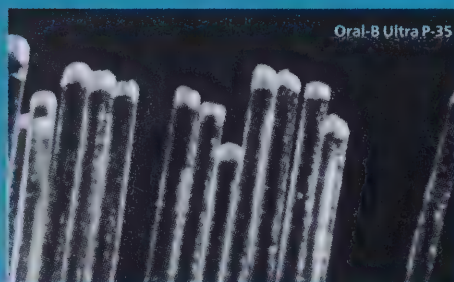
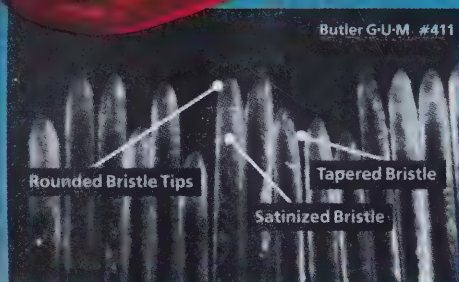
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*C. Mark Gilson, DDS, MS; Gerald T. Charbeneau, DDS, MS; and H. Charles Hill, DDS. All members of the faculty of the University of Michigan School of Dentistry — A comparison of physical properties of several soft toothbrushes.

†Dr. Harald Löe, Director, National Institute of Dental Research — Principles of aetiology and pathogenesis governing the treatment of periodontal disease.

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Vol. 59 No. 12

December/
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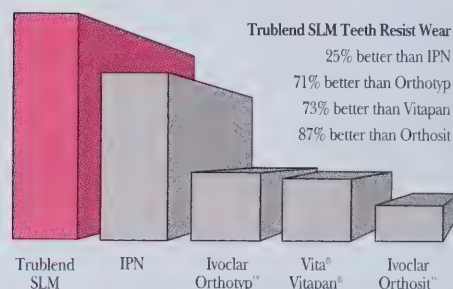
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¹ W.H. Douglas et al., *Journal of Dental Research Special Issue*, No. 425 (July 1992).

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JOURNAL

CANADIAN DENTAL ASSOCIATION/
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CANADIENNE

December/Décembre
Vol. 59 No. 12

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December/
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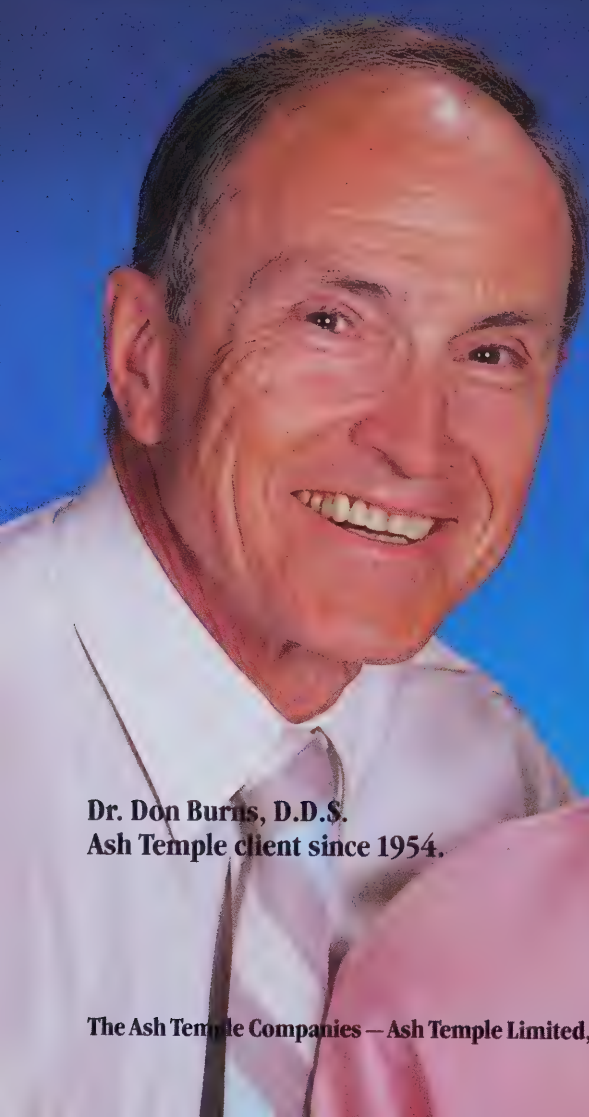
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December/Décembre 1993
Vol. 59 No. 12

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INFECTION CONTROL

987

AIDS and Dentistry: A Retrospective Analysis Of the Florida Case

John Hardie, BDS, M.Sc., FRCD(C)

SCIENTIFIC

995

The Fourth Canal: Its Incidence In Maxillary First Molars

Brian M. Henry, B.Sc., DMD, MS, MRCD(C)

997

Quantification Of the Lamina Dura

J.S. Hubar, B.Sc., DMD, MS

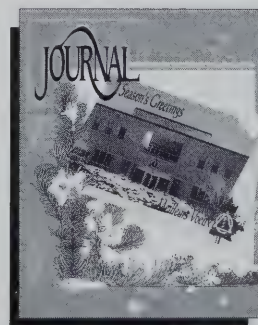
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Alimentation des étudiants de médecine dentaire à leur entrée à l'université

Monique G. Julien, dt.p., M.Sc., MPH, Dr.P.H.

DEPARTMENTS

- 958 Announcements
- 959 Editorial
- 961 President's Column
- 963 Book Reviews
- 964 Library
- 967 Let's Talk
- 970 News Update
- 978 Practice Management & Success
- 984 CDA Dental Meeting
- 1,007 Annual Index
- 1,016 Instructions to Authors
- 1,017 CDA Access Ads
- 1,022 Advertisers' Index



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JOURNAL

December/
Décembre
1993
Vol. 59
No. 12

957

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Newfoundland Dental Association Annual Convention
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October 2-8, 1994
Joint CDA/FDI Annual Dental Meeting
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February/Février 1994

February 3-5: 2nd Catalan Congress on Odontostomatology/Dentalmat 94 at the Palacio de Congresos de Barcelona in Spain. For details, contact: The Official Association of Odontologist and Stomatologist of Catalina, Central Office, Via Laietana, 30, 4° F, 08003, Barcelona, Spain.

February 5: Xi Psi Phi Annual Alumni Day in Toronto, Ontario. For information, contact: Dr. John Wiles, (416) 293-3336.

February 10-12: International Dental Conference 1994, organized by the Dental Association of Malta at the New Dolmen Hotel, Malta. For information, contact: Malta University Services Ltd., University of Malta, Msida MSD 06, Malta.

February 16-20: Jamaica Dental Association 30th National Dental Convention at the Holiday Inn Hotel, Montego Bay, Jamaica. To register, write: Dr. D. Dyer-Morgan, Chairman, Jamaica Dental Association, PO Box 19, Kingston 5, Jamaica, W.I. For travel arrangements, call: Aurora Travel Service, 1-800-451-5421.

March/Mars 1994

March 3-5: Academy of Osseointegration Ninth Annual Meeting in Orlando, Florida. For information,

contact: Academy of Osseointegration, 401 N. Michigan Ave., Chicago, Illinois, 60611-4267.

March 19-26: 33rd International Alpine Dental Conference being held at the Hotel Annapurna, Courchevel, France. For details, contact: International Dental Foundation, 53 Sloane St., London, England, SW1X 9SW.

March 29-April 1: 91st Scientific Session of the Hawaii Dental Association, in Honolulu, Hawaii. For information, contact: Mr. Danny Park, executive director, Hawaii Dental Association, 1000 Bishop St., Suite 805, Honolulu, Hawaii, 96813. Tel: (808) 536-2135.

April/Avril 1994

April 8-9: Southern Ontario Surgical Orthodontic Study Group meeting in Windsor, Ontario. For details, contact: Dr. Jeff Berger (519) 258-2632, or fax: (519) 258-2637.

April 20-24: Annual International Educational Seminar of the American Academy of Cosmetic Dentistry, in Phoenix, Arizona. For information, contact: Ms. Maureen Steckman, executive director, AACD, 2711 Marshall Court, Madison, Wisconsin, 53705.

April 21-24: Irish Dental Association Annual Scientific Conference, in Waterford City, Ireland. For further details, contact: Ms. Margaret Ferguson, Irish Dental Association, 10, Richview Office Park, Clonskeagh Rd, Dublin, 14.

April 21-23: British Dental Trade Association Dental Exhibition, at the NEC Birmingham. For information, contact: The British Dental Trade Association, 84 High St., Slough, Berks SL1 1EL, UK.

April 27-May 1: 51st Annual Session of the American Association of Endodontists (AAE) at the Hilton Hawaiian Village in Honolulu, Hawaii. To register, contact: American Association of Endodontists, Annual Session Registration, 211 E. Chicago

Avenue, Chicago, Illinois, 60611-2691. Tel: (312) 266-7255.

May/Mai 1994

May 22-28: International College of Dentists Annual Meeting-European Section at the Jerusalem Hilton Hotel in Jerusalem. For details, contact: Dr. S. Sussman, Secretariat, ICD European Section, P.O. Box 50006, Tel Aviv 61500, Israel.

June/Juin 1994

June 2-4: Academy for Sports Dentistry Meeting in Pittsburgh, Pennsylvania. For information, contact: Dr. A.W.S. Wood, 1553 Randor Dr., Mississauga, Ontario L5J 3C6. Tel: (905) 823-2008.

June 6-10: 12th National Congress on Dentistry (Latin-American Meeting on Dentistry) at the Havana International Conference Center in Havana, Cuba. For more information, write: Palacio de las Convenciones, Apartado 16046, La Habana, Cuba.

June 20-26: Expodental 94 - Turkish Dental Association Second International Dental Congress in Istanbul, Turkey. For information, contact: Istanbul Chamber of Dentists, Mesrutiyet Cad. 182/7 Sishane, Istanbul, Turkey.

June 25-July 1: 10th Congress of the International Association of Dentomaxillo-Facial Radiology in Seoul, Korea. For information, contact: Congress Secretariat, 10th IADMFR, c/o Korea Convention Services Ltd. SL Youngdong, PO Box 305, Seoul 135-603, Korea.

September/Septembre 1994

September 14-18: 17th Biennial Conference of the New Zealand Dental Association in Christchurch, New Zealand. For information, contact: N.Z.D.A. Biennial Conference Committee, P.O. Box 1183, Christchurch, New Zealand.

JOURNAL

December/
 Décembre
 1993
 Vol. 59
 No. 12

EDITORIAL

PLANNING PAYS



Dr. P. Ralph Crawford,
Editor

Like the two-faced Janus, the Roman god of the doorway, who could look both ahead and behind, most of us pause at the start of the New Year to look back at where we've come from and look ahead at where we're going. What we're really doing is planning, and planning pays.

I was reminded of the profits of planning when I attended CDA's fall planning session in October. Few endeavors have benefitted CDA more than our annual trek to a cloistered retreat, far from the hustle and bustle of a work-a-day office.

The planning session, attended by the members of executive council and senior headquarters' staff, takes place in the fall, within a month or two of the September board of governors meeting. For two days, participants spend hour after hour debating, discussing and planning not only CDA's upcoming year, but also its long-range objectives. It is a time for vision. A time for blue-skying. And it pays.

I remember CDA's first planning session. It took place in 1984. CDA was doing well — it was the golden '80s — and the problems of the day weren't all that horrendous. But the association seemed to lack the broader vision that defines a truly

great organization. To that end, Hubert Drouin, then the executive director, proposed that CDA should conduct a planning session — something like an old fashioned religious retreat is how he described it — preferably in a location away from Ottawa.

That 1984 planning session turned out to be a bit of a surprise to all concerned. It revealed that CDA had a few inner weaknesses that we were only coming to recognize. But it also showed us how sound the basic foundations of CDA were, and how we could build a strong, lasting future on them.

At the time, CDA had no experience in the strategic planning area. To ensure the process was effective and valuable, we retained two facilitators from the Niagara Institute — a kind of corporate think-tank organization.

That first meeting went something like this. Question from facilitator to executive council and senior staff: "Ladies and gentlemen, can you tell me what CDA's mission statement says?" Response: dead silence. We had no mission statement. The same stony silence greeted the facilitators' second question: "Do you issue an annual review to your members?" And the third: "How does your government relations program work?"; the fourth: "Do you have some system in place to review your roles and responsibilities?"; and even the fifth: "Do you have a functional accounting system?"

It seemed amazing that an apparently well-honed organization like CDA, with a 1984 operating budget of nearly \$4,000,000, could be unaware of all these things and still making money. But we were, and I suspect that there were a lot of other associations, and even private companies for that matter, in much the same position.

All this isn't to say that CDA was not performing effectively in the early '80s — far from it. In 1985, for example, CDA launched its innovative national dental awareness plan, which has since been copied by almost every province in the country. But it's now clear that before CDA committed to strategic planning, the association wasn't well positioned to face the future.

In fact, CDA has gained immeasurably from the 10 planning sessions we've conducted since 1984. As a result of strategic planning, CDA's first mission statement was formulated in 1986 (and re-visited in 1992) and we published our first Annual Review in 1989.

More recently, under the guidance of our in-house consultant, Mr. Bill Grogan, virtually every CDA program and activity has been reviewed to see if it is in sync with the association's mission statement, goals and objectives. We've grown in the government relations area, too. Federal government departments such as Revenue Canada and Health Canada have come to rely on CDA as a source of information and cooperation. Much the same can be said for our success in bringing functional accounting to CDA. Today the costs of each and every program CDA offers are accounted for item by item.

Still, new words and concepts keep cropping up at the planning session. In 1992 the buzz word was governance. A full two days was given over to dissecting how CDA governs itself — from the top down and the bottom up. Every department was required to match its individual goals and objectives back to the mission statement.

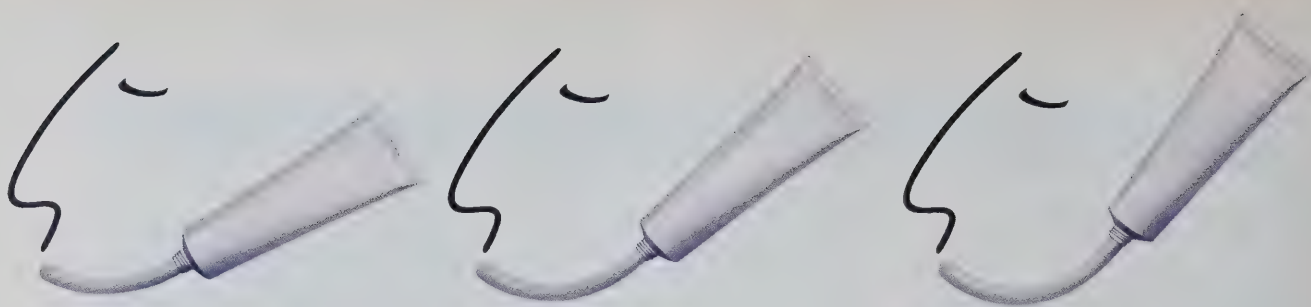
This year, participants at the planning session were introduced to the concept of re-engineering. Basically, CDA is exploring structural options that will make us even stronger, and allow us to build a new, more contemporary house on the foundations that Eudore Dubeau laid more than 90 years ago. Re-engineering will involve asking some tough questions, for example: Why do we do what we do? Why do we do it the way we do? Who should pay for the programs and services CDA provides to the dentists of Canada? Is it time to restructure CDA's board of governors?

Asking questions like these, and resolving them collectively, is what strategic planning is all about. It's hard work, often tedious, and sometimes surprising, but it pays.

*P. Ralph Crawford, BA, DMD
Editor of the Journal of the
Canadian Dental Association*

JOURNAL

December/
Décembre
1993
Vol. 59
No. 12



First, it was caries prevention.

Then plaque.

Then calculus.



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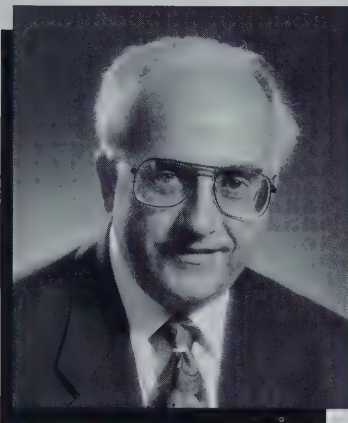
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PRESIDENT'S COLUMN

DENTAL FRAUD — A BETRAYAL OF TRUST



Dr. Raymond Wenn,
President of CDA

December is a time when many Canadians, dentists included, seem to cast all their troubles aside. It doesn't matter how cold it is outside, how early it gets dark at night, or even how tough the economy is, it's the month when most of us pause to count our blessings and enjoy the festive season.

As dentists, one of our blessings is the high level of trust bestowed on us by our patients and our communities. Dental professionals are respected members of society, people — according to numerous surveys and public opinion polls — who the public has come to rely on and believe. It is part of our responsibility, as professionals, to maintain that trust by conducting ourselves and our practices in an ethical and moral fashion.

A second blessing we enjoy is our patients. Canadians not only value good dental care, for the most part they are ready and able to pay for that care. One reason for this, of course, is the growth of dental plans in this country. Each year, the dental insurance industry pays out almost \$2 billion in claims. Our profession has been entrusted by the insurance

companies to ensure that the claims submitted by our patients are both honest and accurate. It's a privilege we must not abuse.

Unfortunately, a few dentists do abuse the third party payment system. A story broadcast on CBC's *Prime Time News* October 27 claimed that dental insurance fraud is "a secret crime that...costs millions of dollars each year and goes virtually unpunished." According to the story, dental fraud is a "rip off of insurance companies that dentists, their professional colleges and even the insurance companies themselves are reluctant to admit."

This situation cannot be tolerated. While we may be justified in claiming that CBC's dental fraud story was unbalanced and sensational, we cannot deny that we have a problem. And both the profession and the insurance industry must be prepared to take whatever action is necessary to rectify it.

The overwhelming majority of dentists, like most Canadians, are honest, hard-working individuals. But there is no denying that there are a few bad apples out there who are involved in fraudulent activity. CDA and all 10 provincial dental associations must take a strong stand on this issue. It makes no difference if a dentist is defrauding the insurance companies for huge sums of money or if he or she is only involved in so-called "soft fraud," like extending the time required to complete a scaling, or redoing a ditched amalgam restoration that may have lasted for another year. Fraud is wrong and it's harmful.

CDA and the 10 provincial associations should act as the first line of defence in the fight to stamp out fraudulent claims. We can encourage our members to maintain high ethical values, and we can inform them about the potential that dental insurance fraud has to hurt both them, as individual dentists, and the profession as a whole.

The brunt of the battle, however, must be borne by Canada's dental regulatory bodies — the 10 provincial licensing authorities. They should be equally willing to act when evidence of dental insurance fraud comes to light. It may be hard, even delicate at times, to criticize or condemn a fellow practitioner, but it's

important to remember what's at stake. Our profession could lose the public trust and respect it now enjoys if the licensing bodies fail to deal with dental insurance fraud quickly and equitably. Our licensing bodies cannot act alone, however. Before they can respond to instances of dental fraud, they must be presented with bona fide cases that are properly documented.

The insurance companies also have a role to play. If they have bona fide data indicating that a dental practice has engaged in fraudulent activities, they must provide this evidence to the appropriate licensing authority. Moreover, blatant cases of fraud involving large sums of money demand legal action. These cases should be subjected to criminal investigation and, if appropriate, brought before the courts.

At present, many cases of insurance fraud are settled out of court, with the accused agreeing to refund all fraudulently obtained monies to the appropriate dental insurers. Unfortunately, there are a few dentists out there who will continue to abuse the system if their only fear of reprisal is having to pay back the money they've stolen.

By taking a strong, public stand on the question of dental insurance fraud, the profession will ensure that the public recognizes that we are concerned about dental fraud — and willing to do whatever is necessary to stamp it out — and the small number of dentists engaged in fraudulent activities will have cause to reconsider their actions.

I frankly believe that the overwhelming majority of dentists are ethical, honest, hard-working professionals. To all of you and your families, I extend my best wishes. May you all have a wonderful holiday season and enjoy a prosperous, happy New Year.

*Raymond Wenn, DDS
President of the Canadian Dental Association*

JOURNAL

December/
Décembre
1993
Vol. 59
No. 12

961

TORADOL

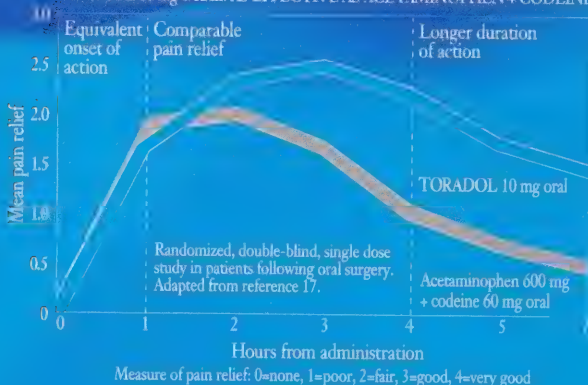
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BOOK REVIEWS

Temporomandibular Disorders, Diagnosis and Treatment

By A.S. Kaplan & L.A. Assael

1991, W.B. Saunders Co., Philadelphia
754 pages, color and black and white illustrations

This book is divided into five sections, covering: basic sciences, pathology, diagnosis, nonsurgical and surgical therapy. While the book has two main authors, it lists 29 other contributors from various disciplines, including neurology, otolaryngology, physical medicine, medical imaging and psychiatry, who review their specialties in terms of temporomandibular disorders.

The book is impressive in scope. Each chapter is well referenced, providing readers with a useful bibliography. Dentists should appreciate the chapters on the cervical spine and physical therapy. Although this information is readily available in the physical medicine literature, it appears less often in the dental literature and is not as well condensed as it is in this text.

The section on treatment begins with a chapter on general concepts. Although this is one of the shortest chapters in the book, it is also one of the most important. It addresses the inherent difficulties that exist in developing treatment philosophies around the currently proposed theories on pathogenesis, which often focus on a specific etiologic factor. The belief that temporomandibular disorders are probably multifactorial in origin is reflected in the number of different topics that are covered and the length of this book.

The sections on treatment, which take up most of the last half of the text, provide a thorough discussion on initial management using nonsurgical, reversible treatments. Occlusal adjustment, prosthodontic therapy, and orthodontic therapy are all introduced through a discussion of the existing research related to temporomandibular dis-

orders and the indications for treatment. The last few chapters review the surgical procedures associated with the temporomandibular joint, and include information on orthognathic surgery as well as a discussion of future surgical possibilities.

The weakest aspect of this book is its coverage of the anatomy and physiology of the masticatory and cervical structures, which could be improved through a better integration of illustrations with text. In addition, TMJ ankylosis is an uncommon finding in children with juvenile rheumatoid arthritis, although it is otherwise stated in the text. The description of dislocation of the disc-condyle complex beyond the articular eminence, in which the disk prolapses anteriorly to the condyle, has yet to be confirmed by published research.

This book was well done, however, and is one of the most comprehensive textbooks in this field. The topics are well organized, allowing the reader to choose from the table of contents or to explore a subject through the index. This is an excellent textbook for dentists interested in or treating temporomandibular disorders.

Reviewed by:

Bruce Blasberg, DMD
Associate professor at the faculty of dentistry, department of oral medical and surgical sciences, at the University of British Columbia.

Management of Pain and Anxiety in Dental Practice

Edited by R.A. Dionne and J.C. Phero

1991, Elsevier Science Publishing Co., Inc., New York

This 400-page, first-edition book attempts to cover the full gamut of pain control and patient management in dentistry and other related fields. Twenty-eight authors have contributed to the text, which is well illustrated with black and white photographs, line-drawings,

and tables. The book is directly referenced in the body of the text, with ample up-to-date references.

The book is presented in six major sections — General Principles of Pain and Anxiety Management, Patient Evaluation and Monitoring, Pharmacologic Management of Acute Pain, Pharmacologic Management of Anxiety, Management of Adverse Events, and, finally, Management of Chronic Facial Pain — which are followed by several appendices and an index.

The six main sections are further sub-divided into 17 chapters encompassing a wide range of subjects, including local anesthesia, analgesics, adult and pediatric sedation modalities, and general anesthesia. There is also a very interesting chapter on medico legal considerations.

This book appears to have been heavily based on (the authors confirm its evolution) the anesthesia review course program started by The American Dental Society of Anesthesiology in the 1980s. It begins with a discussion of pain mechanisms, as well as psychological and behavioral techniques in pain and anxiety management. This is followed by a discussion of pre-operative patient assessment and history taking, and then local anesthesia. The chapter on local anesthesia deals primarily with pharmacology rather than technique. A chapter on periodontal ligament injection, electrical anesthesia and topical anesthesia is included, however.

I was surprised that the authors make no mention of two relatively new local anesthetics, ropivacaine and EMLA (eutectic mixture of local anesthetics). There is a minor error in the chapter on medical history taking with respect to the actual classification of pacemakers (synchronous Venus asynchronous). In addition, there is an error in the section on airway management with respect to the sites anesthetized by the internal laryngeal nerve block.

Continued on page 977

JOURNAL

December/
Décembre
1993
Vol. 59
No. 12

CDA LIBRARY

What's New In the Library This Month?

CDA members can borrow any of the library's books and videos for \$5 each plus applicable taxes. Each month, we produce a new package library — a compilation of approximately 25 articles on a particular dental topic. For a complete list of the videos or package libraries currently available, please call the library at 1-800-267-6354, ext. 223.



To obtain your copy of the package library for December on the subject of **Eating Disorders and Oral Health**, call Diana Garami, Marsha Maslove or Luc-Emmanuel Pinard at: 1-800-267-6354 or 613-523-1770, ext. 234., or fax us at: 613-523-7736. The package and bibliography are available to CDA members for \$5 plus applicable taxes.

Eating Disorders and Oral Health

This month's package library features articles on eating disorders and oral health. The package is available to CDA members at a cost of \$5 (plus applicable taxes). To obtain your package, call 1-800-267-6354 or 613-523-1770. The package is comprised of articles obtained through a MEDLINE search on the library's new CD ROM system.

1. Altschuler, B.D. Eating disorder patients. Recognition and intervention. *J Dent Hygiene*. Mar. 1990; 64(3):119-25.
2. Bedi, R. Dental management of a child with anorexia nervosa who presents with severe tooth erosion. *Eur J Prosthodont and Restorative Dent* Sept. 1992; 1(1):13-7.
3. Bianco, R. Recognition of the eating disorder patient. *Dentistry* — Chicago IL. Feb. 1991; 11(1):10-3.
4. Bretz, W.A. et al. Effects of fluoxetine on the oral environment of bulimics. *Oral Microbiology and Immunology*. Feb. 1993; 8(1):62-5. Cataldo, E. A clinicopathologic presentation. Tooth erosion. *J Mass Dent Soc* 1991; 40(2):53, 86.
6. Cowan R.D. et al. Integrating dental and medical care for the chronic bulimia nervosa patient:

a case report. *Quintessence Int* Jul. 1991; 22(7):553-7.

7. Gross, K.B. Bulimia and anorexia nervosa in dental and dental hygiene curricula. *J Dent Educ* Mar. 1990; 54(3):210-2.

8. Liew, V.P. et al. Clinical and microbiological investigations of anorexia nervosa. *Aust Dent J* Dec. 1991; 36(6):435-41.

9. Mitchell, J.E. Dental complications of bulimia nervosa. *J N.J. Dent Assoc* 1991; 62(1):73-5.

10. O'Reilly, R.L. et al. Orthodontic abnormalities in patients with eating disorders. *Int Dent J*. Aug. 1991; 41(4):212-6.

11. Reiter, C. The secret disease. *Dent Office* Dec. 1990; 10(4):1,4.

12. Ruff, J.C. et al. Bulimia: dentomedical complications. *Gen Dent* Jan.-Feb. 1992; 40(1):22-5.

13. Schlipf, A. Health link. We owe it to the growing number of women afflicted with bulimia to be informed, aware and to care. *Rdh* Apr. 1991; 11(4):14, 16-7.

14. Speer, J.A. Bulimia: full stomachs, empty lives. *Dent Assist* Sep.-Oct. 1991; 60(5):28-30.

15. Spigset, O. Oral symptoms in bulimia nervosa. A survey of 34 cases. *Acta Odontol Scand* Dec. 1991; 49(6):335-9.

16. Tylenda C.A. et al. Bulimia nervosa. Its effect on salivary

chemistry. *JADA* 1991; 122(7):37-41.

Until February 1, 1994, the following library packages will be available to members at a price of two for \$5 (plus applicable taxes), a savings of \$2.50 per package. (The regular price is \$5 per package).

To order these packages, contact the CDA Library at 1-800-267-6354 or 613-523-1770.

- Diagnosing Periodontal Disease
- Xerostomia
- Latex Hypersensitivity
- Porcelain and Ceramic Crown and Bridge
- Electronic Dental Anesthesia
- Cracked Tooth Syndrome
- Dentin Bonding
- Third Molar Extraction
- Rubber Dam
- Stress in Dental Practice
- Bottle feeding, breast feeding and dental caries
- Eating Disorders and oral health

Recent Acquisitions

The following texts have been received by the library and are available for loan to CDA members at a cost of \$5, shipping and handling included.

1. Bowen, W.H. ed. *Cariology for the '90s*. University of Rochester Press : 1993.

2. British Columbia Adult Dental Health Survey 1991 Pt. 1 and 2 (Selected Findings) 1991.

3. Federation Dentaire Internationale. *World Directory of Dental Schools*. FDI World Dental Press : 1993.

4. Melnick, S.L. et al. *A Guide for epidemiological studies of oral manifestations of HIV infections*. WHO : 1993.

5. Schendel, S.A. ed. *Orbital trauma, oral and maxillofacial surgery clinics*. August 5(3) Saunders : 1993.

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Dismemberment premiums will be reduced by more than 50%, and Long Term Disability premiums will be reduced for many participants in certain age bands.

It's all part of the ongoing effort by CDPSI (Canadian Dental Service Plans Inc.) to serve dentists better. As administrator of insurance and investment programs for the CDA and co-sponsoring provincial dental associations, it's our job to provide you with the best value possible.

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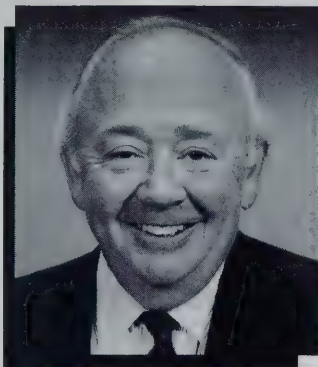
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FINANCIAL PROGRAMS DESIGNED BY DENTISTS FOR DENTISTS



Ring in the New Year With Better Financial Planning

Dr. Rod Moran, President of CDSPI

The close of the year is an excellent time for reflection — to review successes achieved in the past year, and plan for the coming year. At Canadian Dental Service Plans Inc. (CDSPI), this means evaluating improvements to our services for dentists — including lower insurance premiums for 1994 — and what we can still do better. For individual dentists, this reflection should include evaluating their investment and insurance plans in light of changes in their lives.

As this month marks the end of my first year as president of CDSPI, it's appropriate for me to reflect on the company's achievements. Over the year, I've had many opportunities to meet dentists and find out their insurance and investment needs first hand. What I learned was taken into account when CDSPI conducted its annual review of the insurance plans, investment products and services that we administer on behalf of CDA and the co-sponsoring provincial associations.

This resulted in many plans for improvements and innovations to both products and services. On the investment side, some of these enhancements are already in place, such as the Canadian Dental Association Retirement Income Fund (CDA RIF), which was launched in November to allow dentists to continue to earn tax-sheltered returns on retirement income after they close their RRSPs. Other changes, such as the introduction of a new CDA RSP (Canadian Dental Association Retirement Savings Plan) equity fund — the Aggressive Equity Fund — will take place in the new year.

The Canadian Dentists' Insurance Plan (CDIP) was also greatly enhanced. For instance, in 1994, all basic life insurance premiums will be eight per cent lower than the 1993 rates. And you will now be able to insure your spouse for up to \$500,000 of dependents' life insurance coverage. (The previous maximum was \$150,000.)

As well, in January, CDIP's accidental death and dismemberment plan will provide broader coverage at substantially decreased premiums — more than 50 per cent lower than in 1993. The coverage maximum will also double from \$250,000 to \$500,000. These improvements should be of major interest to all dentists, since accidental injury to the hands or impaired eyesight can mean the end of a career.

In fact, you may want to consider taking advantage of CDIP's decreased premiums and higher coverage levels when planning your insurance coverage for next year. Because — even though the holiday season tends to be hectic — it's important to take time to reassess your personal situation and update your coverage, especially if you're coming to your fiscal year-end.

Update Your Insurance to Reflect Your Evolving Needs

To understand what level of coverage is ideal for you, you should take into account any changes that occurred in your life over the past year. For instance, did you expand your practice, add new equipment, complete renovations or other improvements to your office, or employ additional staff? If so, then it's quite likely that your coverage levels in

plans such as TripleGuard (office contents, practice interruption and comprehensive general liability insurance), office overhead expense and data processing insurance should be increased to reflect these changes. Likewise, if you downsized, you may need less coverage (provided that you have been adequately insured up to this point).

You should also consider the effects of any lifestyle changes such as a recent marriage, an increase in income or standard of living, or the birth of children, when reviewing insurance for your personal needs. In order to adequately provide for your dependents, the general guideline for life insurance coverage is to be insured for at least five times your annual income minus the realizable value of your assets.

You should remember that your long-term disability insurance coverage should increase proportionately with your income. (The maximum coverage available through CDIP's LTD plan is \$12,000 monthly.) Again, don't risk being underinsured.

Early Planning and Early Saving

Just as you did with your insurance, you should evaluate your investment situation to ensure that you are investing enough for retirement. You should be contributing your legal maximum — not just to gain tax savings, but to ensure that you have adequate retirement income down the road. (Your maximum contribution is 18 per cent of your 1992 earned income up to \$12,500, minus any pension adjustment. Revenue Canada will inform you of your pension adjustment and contribution

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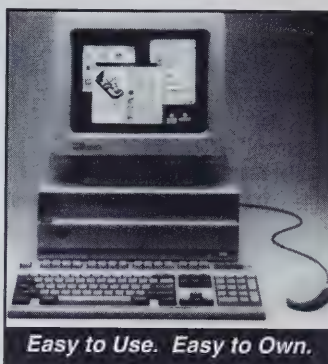
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CDA RETIREMENT SAVINGS PLAN

Unit values: (Funds are valued weekly)

Fund	Unit values at		12 Month Return %
	October 31, 1993	September 30, 1993	
Bond & Mortgage Fund	11.30977	11.13138	11.5%
Common Stock Fund	23.28535	22.01201	31.4%
Money Market Fund	65.54288	65.25899	5.9%
Balanced Fund	42.54320	40.94906	15.5%

G.I.C. Fund

Term	October 31, 1993	September 30, 1993
1 yr	4.80%	4.50%
2 yr	5.20%	5.25%
3 yr	5.85%	5.90%
4 yr	6.10%	6.15%
5 yr	6.35%	6.50%

(*Rates subject to change without notice.)

Total Assets (market value) of the Plan as of

	October 31, 1993	September 30, 1993
	\$191,292,048.00	\$186,847,082.30

For further information:



CDSPI

Write:

CDSPI
Retirement Services Dept.
Suite 710
100 Consilium Place
Scarborough, Ontario
M1H 3G8

or phone, toll free:

416-296-9401 Metro Toronto
1-800-561-9401 Service in English
Extensions:
252, 253, 254
1-800-665-9401 Service in French
1-416-296-8920 Fax.

limit each year.) If you have not been
contributing regularly to an RRSP,
start now.

Looking further ahead, if you currently
make your RRSP contributions
by a lump sum deposit, you may find
regular monthly contributions easier
to manage when you start planning
for your 1994 contribution. The earlier
in the year you invest, the greater
your tax savings, since income accumulates
tax-free in your RRSP.

Also, it may be time to look at your
RRSP investments to see if they are
still appropriate for this stage of your
life and career. Keep in mind that as
you approach retirement, your mix
of investments should change to reflect
your decreased risk tolerance. You can
get the flexibility you need to do this
with the range of funds offered by the
CDA RSP, along with tax-sheltered
investment and a history of superior
performance.

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year will bring, but you can be sure
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and service to our participants in
1994. So, should you need information
to help you enhance your insurance
or investment future as 1994
approaches, just call a helpful CDSPI
representative for assistance.

Take the time now to re-examine
your personal and work situation —
because security and success are just
reflections of good planning.



CDSPI

CDSPI

Retirement Services Dept.
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Scarborough, Ontario
M1H 3G8

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JOURNAL

December/
D cembre
1993
Vol. 59
No. 12

FOR THE DENTIST WITH A THRIVING PRACTICE
TWO PRACTICE MANAGEMENT TRAINING COURSES ON AUDIO-VIDEO CASSETTES



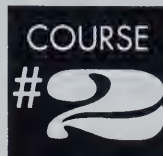
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- ✓ *MAKING APPOINTMENTS* will never be the same.

THE AGENDA:

- Common MISTAKES that most offices make
- 6 MAJOR REASONS WHY patients break appointments
- The proper way to schedule ALL appointments
- The C.W.P. TECHNIQUE
- Effective communications with the CANCELLATION PATIENT
- BOUNTY-HUNTING the no show patient
- Why some COLLECTION policies lead to broken appointments
- The special problem posed by EMERGENCY patients
- The critical DIFFERENCE between appointing & scheduling
- CYA documentation & the RETAINER program
- The importance of new patient INDOCTRINATION
- How to effectively handle PRIME-TIME appointments
- Should we CONFIRM appointments?
- Should we CHARGE for broken appointments?
- How to effectively MONITOR broken appointments
- HOT BUTTON phraseology and scripts
- Doctor intervention & the WHIPPING POST



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RECALL PATIENT MAXIMIZATION will also show you how to activate inactive recalls with **POWERFUL PHONE TECHNIQUES**.
THE DIFFERENCE for you is the bottom line.

THE AGENDA:

- The GOOD, the BAD, the UGLY of recall systems
- Why some patients FALL BETWEEN THE CRACKS?
- The recall system as STEP CHILD
- The NEHRU classification of patients
- Program introduction & new patient RETENTION
- ACTIVATING INACTIVES – when to call-who should call?
- TELEMARKETING GUIDELINES – developing a patient focused & service-oriented office image
- PHONE ACTIVATION SCRIPTS – what to say & what not to say?
- SELLING modern dentistry to recall patients
- Hygiene dept. 4 PRIORITIES
- Recall-new patient referrals & the LAW OF 144
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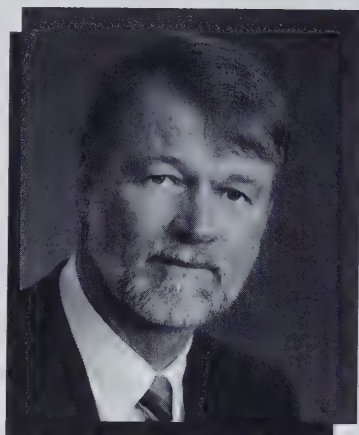
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NEWS UPDATE

Orthodontists Elect New President



Dr. W. Michael Wainwright

Dr. Michael Wainwright of Vancouver has been elected president of the Canadian Association of Orthodontists (CAO).

Dr. Wainwright's election was one of the highlights of CAO's 45th annual scientific meeting — held September 18-21 in Palm Desert, California, as a joint meeting with The Great Lakes Association of Orthodontists.

A dental graduate from the University of Adelaide (Australia) in 1962 and the University of Toronto in 1970, Dr. Wainwright completed his orthodontic education at Indiana University from 1967-1969.

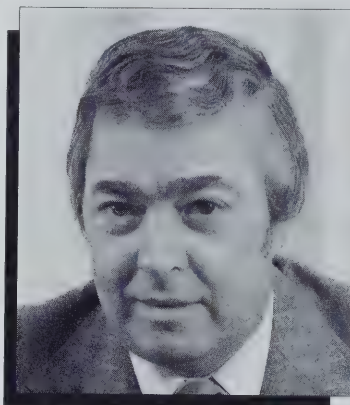
Dr. Wainwright is a fellow of the Royal College of Dentists of Canada and a diplomate of the American Board of Orthodontists. He maintains a private orthodontic practice in Vancouver, British Columbia.

Dr. Wainwright will be joined on CAO's executive by: Dr. Lee Erickson, Dartmouth, Nova Scotia (president-elect); Dr. John Kalbfleisch, Toronto, Ontario (1st vice-president); Dr. Edwin Yen, Winnipeg, Manitoba (2nd vice-president); and Dr. Arlene Dagsy, Toronto, Ontario, (secretary/treasurer).

CAO's 1994 scientific session and annual meeting will be held at the Waterfront Centre Hotel in Van-

couver, B.C., September 29 to October 1, 1994. ■

Dr. John J. King Passes at 58



Dr. John J. King

A St. John's dentist with a unique talent for making his patients laugh is dead. Dr. John J. King died August 26 after a long illness. He was 58.

Patients will remember Dr. King as much for his wit and ready humor, to say nothing of his anecdotes and his Newfoundland songs, as for the excellent treatment he provided. Dr. King will also be remembered for the special relationship he had with children. He had a special place in his heart for his younger patients, and treated them with patience and kindness.

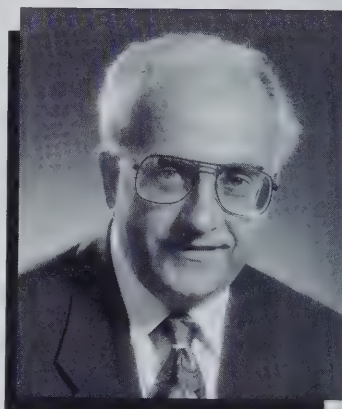
Dr. King graduated from the faculty of dentistry at Dalhousie University in 1958 and established a practice in St. John's. For almost 20 years, he held elected office in the Newfoundland Dental Association (NDA), serving a term as president. During the association's 1993 annual meeting, Dr. King was awarded life membership in NDA: "in recognition of his outstanding contribution to the art and science of dentistry, his provincial association and his communities."

This fall, NDA established the Dr. John J. King Developing Fund, under the auspices of the Canadian Fund for Dental Education (CFDE), in honor of Dr. King's dedication to

the practise of dentistry and his many contributions to the dental profession. If the fund reaches \$10,000 within five years, it will receive endowment fund status and become a permanent fund. Once this occurs, the annual interest earned by the fund can be used to support a special program or project.

NDA has also established the Dr. John J. King Memorial Lecture, which will be presented annually at the NDA annual meeting. ■

CDA President Concerned Over CBC Fraud Story



*Dr. Raymond Wenn
President of CDA*

CDA president Dr. Raymond Wenn has written to the Canadian Broadcasting Corporation (CBC) to express the association's concerns over the one-sided and biased nature of an October 27 *Prime Time News* story on dental insurance fraud.

In a strongly-worded letter to Mr. Tim Kotcheff, the vice-president of news and current affairs at CBC, Dr. Wenn said:

On behalf of the members of the Canadian Dental Association I want to express disappointment with the segment on fraud in dentistry that aired Wednesday evening on CBC *Prime Time News*.

My predecessor, Dr. Bernard Dolansky, represented the members of the Canadian Dental Association when interviewed by the CBC on this topic last June. Unfortunately, the producer chose not to include Dr. Dolansky's interview, perhaps because he did not say what CBC's investigative journalists wanted to hear.

Dr. Dolansky clearly stated CDA's position in his interview with Ms. Whitham. He said that fraud cannot be tolerated and that the parties involved, including licensing authorities, should take action to put a stop to such abuses. Further, insurance and benefit companies should accept their responsibility for the funds entrusted to them, treat fraudulent claims as criminal acts, and seek prosecution through the criminal justice system.

Rather than present Dr. Dolansky's points, which would have created a balanced piece, the producer chose to create a sensational story. Such tactics serve to misinform Canadians, and to my knowledge, this is not the mandate of the Canadian Broadcasting Corporation. ■

New Headform Developed

A new adult male headform has been developed by the Canadian Standards Association (CSA) with the tireless and unceasing support of a small group of volunteers dedi-

cated to the prevention of face and head injuries in sports.

The new headform is the first of its kind to have accurate facial features. It follows the development of two earlier CSA headforms, which set a world standard for the production of safe, certified sports helmets.

"Allan Average," the first headform, was designed in 1983 to test hockey helmets and face protectors intended for the use of children between five and 10 years of age (Pedodontist Is Dedicated To Elimination Of Sports Injuries. "News Update," *J Can Dent Assoc* 50:338-340, 1984). CSA's juvenile headform, which was developed to test similar equipment for both children between the ages of 11 and 13 and adult women, was produced in 1988.

The development of these headforms was the result of the combined efforts of a diverse but dedicated group of professionals. Initially, the impetus came from Dr. Arthur Wood, a Mississauga pediatric dentist, Mr. Charlie Patterson, an engineer at York University, and Dr. Thomas Pashby, a Toronto ophthalmologist.

Both Dr. Wood and Dr. Pashby had become concerned by the growing number of patients they were treating for sports-related facial and eye injuries. Dr. Wood actually began his personal crusade to reduce head and mouth injuries in hockey in 1952, when he enlisted Mr. Patterson to help him develop a

helmet and mouth-guard. That work eventually led to Dr. Wood becoming Canadian dentistry's representative on CSA's technical committee for the evaluation of protective equipment for athletes. Dr. Wood and Dr. Pashby have both been CSA volunteers since the early 1970s, and both subsequently received the Order of Canada for their years of toil and dedication.

Another integral contributor to headform development is Dr. Frank Popovich, a Burlington orthodontist and University of Toronto staff member. He was responsible for the "Burlington Study," which amassed growth and development data from 1,680 youngsters and 312 parents between 1952 and 1971. Dr. Popovich's unique data contributed not only to a better understanding of facial growth patterns, but had a profound influence on the final contours of CSA's various headforms.

The new adult headform was sculpted in plastene and cast in polyester resin by Dr. William G. McIntosh, a past-president of CDA and the association's executive director from 1966 to 1977. After retiring from CDA, Dr. McIntosh pursued his interest in sculpting and graduated from the Ontario College of Art.

"This is the best headform that's ever been made, particularly since it has facial features," said Dr. Wood. The accuracy of the nose, jaw and eyes and other facial features on the adult headform will play a key role in testing hockey face masks and other equipment for protecting the eyes and face.

Initially, CSA will use the new headform for testing wire grid face protectors and goalie masks. Dr. Pashby believes that it will eventually be used for testing hockey helmets and face protectors to an International Organization for Standardization (ISO) standard that is now a draft document. ■



The developers of the new adult head form destined to set safety standards around the world (l to r): Dr. Tom Pashby, Mr. G. Makowiecki (CSA), Dr. W. McIntosh, Dr. Arthur Wood, Mr. John Caicco (CSA), Dr. Frank Popovich, and Mr. Brian Black (CSA).

13th Annual Essay Awards Competition Announced

The American Society for Geriatric Dentistry has announced its 13th annual student essay contests. De-

signed to encourage interest in geriatrics, the contests are open to dental and hygiene students in the United States and Canada who are enrolled in an accredited program.

Two awards are available. Named after a pioneer educator in the field who was one of the most visible legislative advocates for geriatric oral health care, the Saul Kamen Scientific Report Award is targeted primarily at graduate students and residents in advanced oral health-related programs. The Arthur Elfenbaum Essay Award — named after one of the earliest advocates of geriatric and gerontological education for dental professionals — is given for the best-referenced scholarly essay on a health care concept, health care policy, or clinical issue concerning geriatric oral health.

Both the Elfenbaum Essay and the Kamen Scientific Report awards offer a \$1,500 first-prize, \$500 second prize and \$200 third prize. In addition, selected submissions may be considered for publication in *Special Care in Dentistry* or for presentation at the annual meeting of American Society of Geriatric Dentistry.

Further information may be obtained by writing to Dr. Kenneth Shay, Chairman, Essay Award Committee, Ann Arbor DVA Medical Center, 2215 Fuller Road, Ann Arbor, MI 48105. ■

Quebec Dental Surgeons Elect New President

Dr. Daniel Pelland of Granby was elected president of the Quebec Dental Surgeons Association October 31. He replaces Dr. Claude Chicoine, who had held the president's position since 1975.

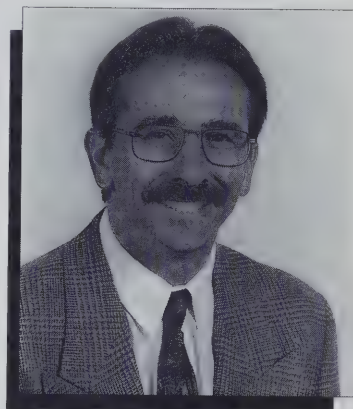
Dr. Pelland is a graduate of the Université de Montréal and entered practice in 1975. He has been active in the Quebec Dental Surgeons' Association (QDSA) since 1979, serving as the director of executive council and the deputy executive director, and was responsible for the association's Centre Dentaide.

With his election as president, Dr. Pelland was also named as chairman of the administrative council of

CDA Conducts 10th Planning Session



CDA held its 10th annual planning session October 14-16 in Val Morin, Quebec, to chart the association's course for 1994 and beyond. Participants at the three-day session included members of CDA's executive council and senior staff (l to r): Dr. Barry Dolman (Quebec), Dr. Richard Sandilands (Alberta), Dr. Toby Gushue (Nfld), Dr. John Diggins (B.C.), Dr. David Somer (Ontario), Mr. Bill Grogan (special consultant to CDA), Dr. Bernie White (Saskatchewan) and Dr. Raymond Wenn (P.E.I.). Seated: Dr. Bryun Sigfstead (Alberta).



Dr. Daniel Pelland

QDSA's affiliates, Sogedent Assurance Co. Inc. and Centre Dentaide, the company that administers the association's Dentaide card program.

Dr. Pelland will be joined on the 1993-94 QDSA executive by Dr. Barry Dolman of Montreal, who becomes the director of executive council (Dr. Dolman is also QDSA's representative to the CDA board of governors and a member of CDA's executive council); Dr. Maurice Roy (Alma), first assistant to the director; Dr. Chantal Lafrenière (Val Bélair) as second assistant to the director; Dr.

Daniel Montminy (Greenfield Park) as treasurer; and Drs. Gilles Thériault (Rimouski), André Provost (Laval), and Louis Dubé (Sherbrooke) as members of council. ■

Are You A Member?

If you have retired from dental practice and think you are a member of CDA — think again.

Recently, in order to comply with Canadian Circulations Audit Board (CCAB) regulations, the *Journal* wrote to nearly 1,000 CDA life members, retired dentists, and individuals who have been on our mailing list since graduation, but whose names could not be found in any provincial licensing body directory. The majority replied to our letter, verifying their address and asking to be kept on our mailing list. We also received a few words of praise about our publication.

But we found ourselves in a bit of a conundrum when some dentists said they were surprised to hear they were not CDA members and that their names could not be located in any provincial licensing body directory. In fact, those who wrote stating that they were retired members of a



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provincial association — even though their names did not appear in their provincial directory — were correct. Here's the catch, however. Regardless of whether a dentist holds retired membership in a provincial association, he or she may not be a member of CDA. To maintain membership in CDA, retired dentists must actually join CDA in the retired membership category and pay a small annual fee.

If you have retired from dental practice and would like to be a member of CDA, please contact CDA's membership secretary at 1-800-267-6354 or 613-523-1770 to obtain more information. ■

Bleak Future Predicted For Hospital Dentistry

If the keynote speaker at CDA's 37th Teaching Conference is correct, the future of hospital dentistry in Canada is bleak.

Mr. Ted Ball, the president of PoliCorp and Health Concepts Consultants, attended the October 15-16 conference to address the topic: "Is There A Future For Hospitals?" Held in Toronto, the event attracted over 60 participants. Dr. John Hardie, a regular contributor to the *Journal* and the head of dentistry at Vancouver General Hospital, acted as conference chairman. Presentations were made by Dr. Kenneth Bentley (Montreal General Hospital), Dr. David Kenny (Hospital For Sick Children, Toronto), and Dr. Felicity Hardwick (University of Manitoba).

The timing of the conference may have been apropos. Health care was an important issue in Canada's federal election campaign — the vote was held October 25 — and some provincial governments are considering cutting back or eliminating their dental internship programs.

The teaching conference was sponsored by Procter & Gamble/Crest and the Canadian Fund For Dental Education. ■

NDEB Appoints New Executive Director/Registrar

Dr. Jack D. Gerrow of Halifax, Nova Scotia, has been appointed as



Dr. Jack D. Gerrow

the new executive director/registrar of the National Dental Examining Board (NDEB).

Dr. Gerrow replaces Dr. Gundega Kravis, who will retire as executive director/registrar December 31.

After graduating from the University of Toronto's dental program in 1979, Dr. Gerrow established a practice in Kapuskasing, Ontario. In 1981 he returned to Toronto to es-



Dr. Gundega Kravis

tablish a new practice and teach restorative dentistry. He became a member of the dental faculty at Dalhousie University in 1985, and is currently an associate professor of prosthodontics and the associate dean of academic affairs.

In addition to his DDS from Toronto, Dr. Gerrow holds a certificate in prosthodontics and an M.Sc. from the University of Iowa, as well as a M.Ed. from Dalhousie. He is active in a number of professional

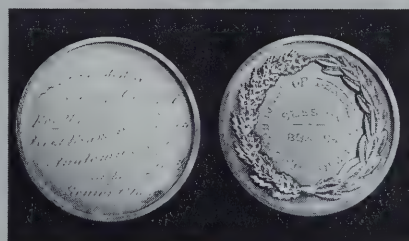
"WHAT'S IT?"

This month's **What's It** mystery involves two silver medals found in an antique shop in Ottawa. Both medals are similar, both were minted by the Ohio College of Dental Surgery and both were awarded to Edward G. Barnett.

One medal was awarded for the 1892-93 session and bears the inscription: "Awarded to E. G. Barnett for the Best Examinations in Prosthetic Dentistry and Metallurgy in the Junior Class." The other, awarded in the 1893-94 session, is inscribed: "Awarded to Edward G. Barnett for the Best Examinations in Anatomy & Oral Surgery in the Senior Class."

Two questions need answering: Who was the obviously bright student named Edward G. Barnett, and how did his medals turn up in Ottawa 100 years later?

If you know the answer to these questions, please contact Dr. Ralph Crawford, Editor of the *Journal of the CDA*, 1815 Alta Vista Drive, Ottawa, Ontario, K1G 3Y6. ■



organizations, and is currently the president of the Association of Prosthodontists of Canada, president-elect of the Federation of Prosthodontic Organizations and co-ordinator of the Canadian Fund For Dental Education's summer institutes. Dr. Gerrow also maintains a prosthodontic practice in Halifax.

Dr. Kravis is stepping down after 20 years as NDEB's executive director/registrar. The first full-time registrar appointed by the board, she played a major role in developing the national profile that NDEB enjoys today.

Also a graduate of the University of Toronto, Dr. Kravis began her dental career in Thistletown and Woodbridge, Ontario, where she established a private practice. From there, she went on to become the director of dental services for the Ottawa Board Of Education.

As executive director/registrar of NDEB, Dr. Kravis's actions have been guided by her vigorous sense of fairness and objectivity. She is respected by her peers for the high standards she set for both herself and the board.

Dr. Kravis is a fellow of the International College of Dentists and of the American College of Dentists. ■

Dental Consumer of the '90s Seminar To Be Offered in 1994

With the support of Ash Temple, CDA will offer its Dental Consumer of the '90s seminar in seven Canadian cities in 1994.

The seminar, developed by Mark Sarner of Manifest Communications for CDA, will be presented next spring in Edmonton, Saskatoon, London, Montreal, Quebec City (in French) and Fredericton, and in St. John's, Newfoundland, in September.

Designed to inform dentists about the changing needs of today's dental consumer, the day-long seminar will address the current and future economic, demographic and consumer trends facing Canadian society and the dental profession in the '90s. Newly updated and improved, the seminar is intended to help participants create and main-

tain an acceptable level of busyness in their practices. At the end of the seminar, each participant will receive a workbook full of useful information and tips.

For more information, please call CDA at 1-800-267-6354 or 613-523-1770. ■

Obituaries

Bazerman, Abraham William: Dr. Bazerman graduated from McGill University's dental faculty in 1943. He was a life-member of the Canadian Dental Association. He died August 15, 1993, at the age of 76.

Beauregard, Jocelyne: Dr. Beauregard graduated from the University of Montreal's dental faculty in 1969.

Boyes, M.G.: Dr. Boyes graduated from the University of Toronto's dental faculty in 1935. He was a life member of the Canadian Dental Association.

Brown, John M.: Dr. Brown graduated from the University of Toronto's dental faculty in 1947. He was a life member of the Canadian Dental Association. He died June 11, 1993.

Christensen, Martin H.: Dr. Christensen graduated from the University of Alberta's dental faculty in 1990. He died in October, 1993.

Colettis, Basil: Dr. Colettis graduated from McGill University's dental faculty in 1965. He practised dentistry in British Columbia. He died September 24, 1993.

Cormier, G.A.: Dr. Cormier graduated from the University of Montreal's dental faculty in 1942. He was a life member of the Canadian Dental Association.

Crutchfield, Charles: Dr. Crutchfield graduated from McGill University's dental faculty in 1943. He was a life member of the Canadian Dental Association.

Downer, Walter J.: Dr. Downer graduated from the University of Toronto's dental faculty in 1950. He was a life member of the Canadian Dental Association. He died September 9, 1993.

Granove, Sydney: Dr. Granove graduated from the University of Toronto's dental faculty in 1944.

He served as a captain in the Dental Corp of the Canadian Army and practised dentistry in Winnipeg for many years. He was a life member of the Canadian Dental Association. He died September 21, 1993.

Jones, Ted E.: Dr. Jones graduated from the University of Alberta's dental faculty in 1962. He practised dentistry in Edmonton, Alberta. He died August 28, 1993.

Kerby, John R.: Dr. Kerby graduated from the University of Toronto's dental faculty in 1951.

Lapointe, Bernard: Dr. Lapointe graduated from the University of Montreal's dental faculty in 1933. He was a life member of the Canadian Dental Association. He died in August 1993.

Lukas, Jack E.: Dr. Lukas graduated from the University of Minnesota's dental faculty in 1934. He was a life member of the Canadian Dental Association. He died September 8, 1993.

Martin, W. Kenneth.: Dr. Martin graduated from the University of Toronto's dental faculty in 1946. He practised dentistry in Regina, Saskatchewan. Dr. Martin was a past president and life member of the College of Dental Surgeons of Saskatchewan and a life member of the Canadian Dental Association. He died September 30, 1993.

Mills, Fred Stewart: Dr. Mills practised dentistry in Elgin, Ontario. He died September 13, 1993.

Milne, George: Dr. Milne graduated from the University of Toronto's dental faculty in 1950. He practised dentistry in Sarnia, Ontario. He was a life member of the Canadian Dental Association. He died April 18, 1993.

O'Hara, Allan W.: Dr. O'Hara graduated from the University of Toronto's dental faculty. He served with the Royal Canadian Dental Corps overseas and, on his return, practised dentistry in Kingston, Ontario. He died May 11, 1993.

Sadler, E.W.: Dr. Sadler graduated from the University of Toronto's dental faculty in 1938. He was a life member of the Canadian Dental Association. He died July 26, 1993.

Smith, Edward F.: Dr. Smith graduated from Northwestern University's Dental School in 1950. He practised dentistry in Regina, Saskatchewan. He died October 5, 1993.

Turner, Jay W.: Dr. Turner graduated from the University of Toronto's dental faculty in 1945. He was a life member of the Canadian Dental Association. He died February 9, 1993.

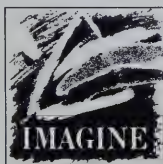
Willmott, George W.: Dr. Willmott graduated from the University of Toronto's dental faculty in 1932. On graduation, he practised dentistry in Strathroy, Ontario, until he joined the Canadian Dental Corps and served in England during the Second World War. When he returned, he continued to practise in Strathroy, then joined the staff of Westminster Hospital in London until his retirement. He was a life member of the Canadian Dental Association. He died in February 1993.

Wright, Donald V.: Dr. Wright graduated from the University of Toronto's dental faculty in 1979. He practised dentistry in Frankford, Ontario.



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BOOK REVIEWS (Continued from page 963)

The discussion of sedation techniques carefully refers the reader to various state (provincial) regulations and guidelines on their use. Some readers may be inclined to use some of the described techniques or combinations, despite a lack of adequate training. I would also hesitate to recommend a dose of 0.6 mg per kilogram of oral diazepam, as stated in the text, for use in pediatric patients.

This book attempts to review a vast array of topics in a relatively short, compact text. To this end, it

succeeds quite admirably. For the in-depth knowledge required to fully address each of these tasks, however, more detailed and specific reading would be required.

Reviewed by:

*Dr. Earle R. Young, B.Sc., DDS, B.Sc.D., M.Sc., FADSA
Associate Professor and Head, department of anesthesia, faculty of dentistry, University of Toronto and The Wellesley Hospital, Toronto, Ontario.*

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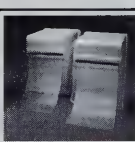
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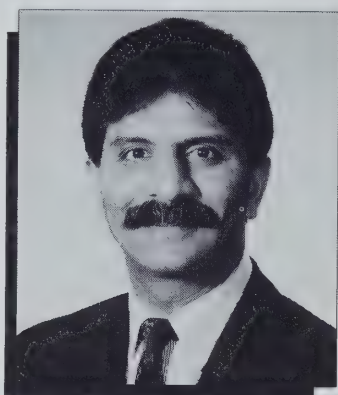
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State of Affairs: Examining Your Financial Status

Imtiaz Manji, B.Sc.,
President of ExperDent

The onset of winter is a natural time for many of us to reflect on where we are, to evaluate our performance over the past year, and to identify opportunities for success in the coming one. This reflection often includes revisiting our financial affairs — an important exercise for virtually all of us, but a critical one for dentists who found the past year a financial struggle. In fact, if you were unable to fund all of your discretionary wants and lifetime needs from your practice income during the past 12 months, it's imperative that you reassess and plan your financial objectives.

The most useful financial planning tool for managing productivity in a dental practice is break even point analysis. Traditionally, dentists haven't included their own compensation in the break even point equation. In this study, however, break even analysis will take into account dentists' goals for personal income. In effect, we have redefined the break even point to be the moment when production becomes excess profit, that is, the profit your practice generates after you have been paid.

Generally, dentists don't have much difficulty calculating their practice overheads. Either on their own or with the help of a financial advisor, they combine their fixed and variable overheads to pinpoint the costs of running their practice. But they often have no idea, in dollar terms, what their personal

income needs are, as they haven't identified this figure in their calculations. Instead, they've met their needs by drawing on the practice "leftovers."

Types of Income Needs

Defining your personal needs can be difficult. For example, do you need to get away every winter to Hawaii, Mexico or Costa Rica? Although most people would agree that exotic vacations are not a necessity, many people consider travel to be part of the lifestyle they want or expect. Consider the following three levels of personal needs — minimum income, reasonable income and ideal income. Each level will allow you to accommodate some or all of your necessities, expectations and desires. And each gives you more latitude in your discretionary spending to reflect differing goals.

Minimum Income

Minimum income is the income you need to meet your essential needs. In effect, although your discretionary spending will be severely limited, minimum income allows you to budget for all necessities. Therefore, when determining your minimum income needs, you must be critical of your spending habits.

For example, a young dentist who has just entered practice may decide that setting funds aside for retirement is less important than

saving for a down payment on a home. As a result, he or she may choose not to budget any money for retirement planning in the coming year.

Reasonable Income

Reasonable income needs allow you to achieve a particular lifestyle. At this level, you should accommodate more of your expectations and personal goals. Therefore, when determining your reasonable income needs, it is acceptable to allow yourself greater discretionary spending. The goal of this exercise is to provide you and your family with a comfortable, satisfying lifestyle.

For example, whereas your minimum income may not have allowed you to put aside money for the future, your reasonable needs should budget for these financial plans. College education funds for children, retirement planning, a savings program and an emergency fund should be seriously considered.

Ideal Income

Unlike minimum income, which is based on necessities, and reasonable income, which is based on expectations, your ideal income should be based on desires. It should allow you to achieve all your goals. Of course, you still have to be realistic. Set your sights high, but not impossibly high.



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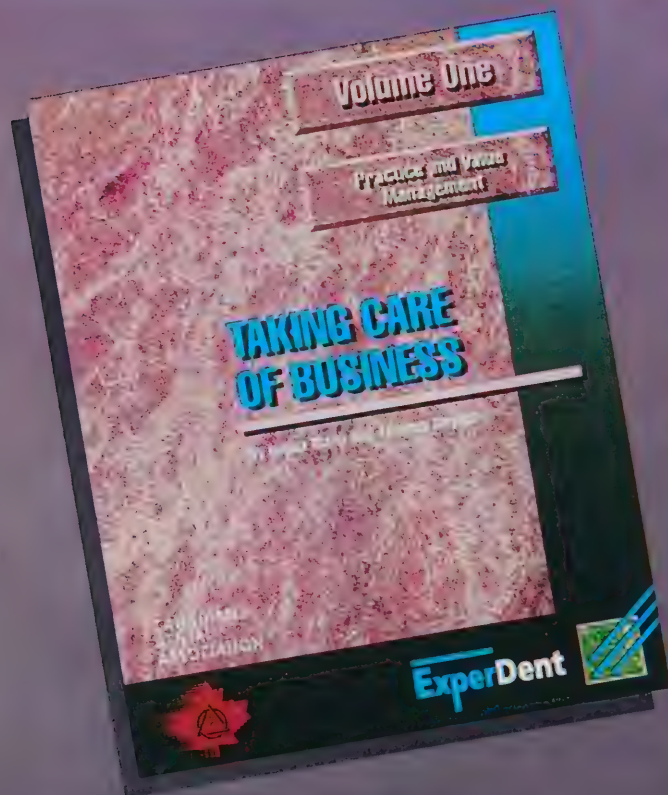


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New Graduate - 1993

"It amazes us how relevant this information is to both new graduate dentists and long-time practitioners. We applaud CDA and ExperDent for their initiative, although we feel you may have given away too much of your valuable information."

Frankford, Ontario
11 Year Graduate

"I have just completed my review of Taking Care of Business, Volume I and I want to say that Practice Management and Value Appraisal is outstanding. Magnificent comes to mind. I am aware of no source for similar material that is as all encompassing, thorough and timely."

This year, the Canadian Dental Association in partnership with ExperDent Consultants, will launch "Taking Care of Business", its unique new Practice Management Program for both new grads and established members of the profession. Two volumes of Program materials and practical information will be available to CDA members on:

- Practice Management and Value Appraisal
- Associate and Transition Planning

Watch for further information in both the CDA Journal and Communiqué and find out why those dentists who've previewed these materials feel that it's like "having an MBA in you back pocket".



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The Practice of Dr. X

In the following case study, the concept of break even point analysis will be illustrated using the figures and calculations for the practice of the hypothetical Dr. X.

Dr. X is in her early 40s and lives in Vancouver. She has two children, 17 and 14. Three years ago, she purchased a four bedroom house in a neighborhood close to her practice.

Personal Income Goals

After reviewing her personal financial needs and wants, Dr. X set these personal income goals:

Minimum Income: \$100,000

Reasonable Income: \$150,000

Ideal Income: \$200,000

Anticipated Practice Expenses

Last year, Dr. X's practice generated \$400,000 in production and a total of \$260,000 in expenses. After analyzing her fixed and variable expenses, Dr. X made the following forecasts for the coming year:

Fixed Expenses: \$200,000 for the next 12 months

Variable Expenses: 15.5 per cent of production

(Fixed expenses are those that are incurred regardless of whether or not you are providing services, and include such things as rent and salaries or professional fees. Expenses such as lab fees and dental supplies — which depend on your production — are known as variable expenses. The more productive you are, the higher the cost of your variable expenses.)

Calculating the Break Even Point

Using your own income goals and expense budgets, you can now calculate the annual production you need to break even. By factoring in each level of income (minimum, reasonable and ideal), you can determine how much production you must achieve to meet each income level.

The formula for calculating the break even point (BEP) is:

$$\text{BEP} = \frac{\text{Fixed Expense Budget} + \text{Income Goal}}{1 - \text{Variable Expense Factor}}$$

Four BEPs can be calculated — based on your expenses alone, and your expenses in combination with each of your income goals.

Projected Annual BEPs for Dr. X

The practice break even point (PBEP) is the annual production Dr. X must achieve to break even on her practice expenses:

$$\text{PBEP} = \frac{200,000}{1 - 15.5\%} = \frac{200,000}{0.845} = \$236,686 \text{ per year}$$

The minimum break even point (MBEP) is the annual production Dr. X must achieve to draw a minimum salary:

$$\text{MBEP} = \frac{200,000 + 100,000}{1 - 15.5\%} = \frac{300,000}{0.845} = \$355,030 \text{ per year}$$

The reasonable break even point (RBEP) is the annual production Dr. X must achieve to draw a reasonable salary:

$$\text{RBEP} = \frac{200,000 + 150,000}{1 - 15.5\%} = \frac{350,000}{0.845} = \$414,201 \text{ per year}$$

The ideal break even point (IBEP) is the annual production Dr. X must achieve to draw an ideal salary:

$$\text{IBEP} = \frac{200,000 + 200,000}{1 - 15.5\%} = \frac{400,000}{0.845} = \$473,373 \text{ per year}$$

As a result of this analysis, Dr. X realizes she must improve her production by \$73,373 (since her production last year was \$400,000) to meet her ideal income needs next year.

The ideal BEP will be a difficult annual goal to attain for many dentists. Yet, if you plan early and set achievable goals, you should be able to develop your practice to reach the necessary production levels.

Projected Daily Revenue for Dr. X

Dr. X's practice had \$400,000 in production last year and was open a total of 192 days. Dr. X expects production to increase by five per cent in the next 12 months due to practice growth. The results of her calculations are:

Average Production per Day =

$$\frac{\text{Total Production}}{\text{Total Days Worked}} = \frac{\$400,000}{192} = \$2,083$$

Expected % Increase = 5%

Increase Each Day = Avg. Production per Day x Per

Cent Increase = 2,083 x 5% = \$104

Budgeted Production/Day = Avg. Prod + Increase = 2,083 + 104 = \$2,187

Dr. X expects to produce an average of \$2,187 each day her practice is open in the next 12 months.

Calendar Days BEP

By now, you know the production you need in the next year to cover your expenses and reach your three income levels. You also know how much production you expect to make each day you work next year. Since you know your annual goals and you know your daily production, you can calculate the number of days you need to work to reach each goal.

This is called the "calendar" break even point, because it expresses your annual production goal in terms of the number of days you need to work. If you work the necessary days, have adequate patient flow, and generate at least the budgeted daily production each and every day, you will meet or possibly surpass the goals you set.

Dr. X's budgeted production per day for the next 12 months is \$2,187. Here are her calculations to determine the number of days she has to work to achieve each annual production goal:



Calendar Days...

$$\text{PBEP} = \frac{\text{Annual Practice BEP}}{\text{Production/Day}} = \frac{\$236,686}{\$2,187} = 108 \text{ days}$$

$$\text{MBEP} = \frac{\text{Annual Minimum BEP}}{\text{Production/Day}} = \frac{\$355,030}{\$2,187} = 162 \text{ days}$$

$$\text{RBEP} = \frac{\text{Annual Reasonable BEP}}{\text{Production/Day}} = \frac{\$414,201}{\$2,187} = 189 \text{ days}$$

$$\text{IBEP} = \frac{\text{Annual Ideal BEP}}{\text{Production/Day}} = \frac{\$473,373}{\$2,187} = 216 \text{ days}$$

Based on these results, Dr. X is comfortably meeting her practice expenses and her minimum income needs. If she keeps her expenses at or under budget for the coming year, and achieves an average daily production of \$2,187, she will comfortably achieve a reasonable income as well.

However, to reach her ideal needs, Dr. X would have to schedule another 27 days of production into the year. This doesn't seem possible, but she knows that her retirement income will be jeopardized if she doesn't make substantial increases in her retirement funding.

Decisions for Dr. X

Dr. X recognized that her lack of retirement planning in the past, and the impending college education of her children, made it essential to increase her income in the coming year. Rather than scheduling 192 days like she did last year, Dr. X has decided to open her practice an extra half day each week (Friday mornings). This would mean the practice could be open for a maximum of 234 days in the year (4.5 days/week x 52 weeks).

After reviewing the calendar in detail, she decided to limit her personal vacation to 10 days. Statutory holidays accounted for 10 days. Dental meetings and continuing education took up two and four days respectively. Dr. X decided to take an extra day off at both Easter and Christmas, and allowed three days for illness or unexpected contingencies. In the end, she committed to work 203 days.

Hopefully, you have chosen your calendar days carefully to meet your goals as best you can. Sometimes difficult decisions have to be made. Some practitioners may find they have to work many more days than they expected to reach their goal.

The Final Analysis

The final step in the break even analysis is to set daily production goals. You now know the annual production goals you need and you have committed yourself to the number of days you are going to work in the next month. Using these numbers, you can set daily goals that will allow you to reach each break even point

based on the number of days you have scheduled in your calendar.

Dr. X's annual production BEPs are:

Practice:	\$236,686
Minimum:	\$355,030
Reasonable:	\$414,201
Ideal:	\$473,373

She has planned and committed her dental calendar to 203 days in the next 12 months. Here are her calculations to determine her production goals each day based on her break even points:

$$\text{PBEP} = \frac{\text{Annual Practice BEP}}{\text{Number of Days}} = \frac{\$236,686}{203} = \$1,165 \text{ per day}$$

$$\text{MBEP} = \frac{\text{Annual Minimum BEP}}{\text{Number of Days}} = \frac{\$355,030}{203} = \$1,748 \text{ per day}$$

$$\text{RBEP} = \frac{\text{Annual Reasonable BEP}}{\text{Number of Days}} = \frac{\$414,201}{203} = \$2,040 \text{ per day}$$

$$\text{IBEP} = \frac{\text{Annual Ideal BEP}}{\text{Number of Days}} = \frac{\$473,373}{203} = \$2,331 \text{ per day}$$

This final step in the break even analysis has proven to be the most valuable for Dr. X! Since she made a modest increase in the number of days she will work in the next year, the ideal goal is suddenly within reach at \$2,331 per day. She has already budgeted that she expects to average \$2,187 per day in the next year. The difference of \$144 per day can be achieved with a seven per cent increase in productivity. This is a goal that she feels is both understandable and achievable.

The greatest benefit of a break even analysis is that your entire year's financial plan is reduced to a daily production goal. If you meet your production goal each and every day, your success is assured and your personal income will reach the levels you want.



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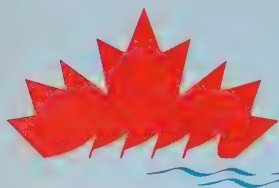
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FDI 1994

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A Sense of Urgency to Register Now



It was a tremendous opportunity for us to be at the American Dental Association's Annual Meeting in San Francisco November 6 - 10, 1993. The ADA Meeting was a huge success with 53,000 participants! There was much action in the Moscone Centre as thousands of dental team members were busily making their way to lectures or to visit the exhibit hall.

FDI 1994 had a booth at the ADA Meeting where we promoted the city of Vancouver and invited our American colleagues to join us for next year's international event. During the course of the ADA Meeting we were delighted that many American dental professionals registered for the '94 Congress. We're anticipating a record number of Americans to join us next year.

The efforts and hard work of the 1994 committee and staff are certainly paying off. At present, our exhibit area for the '94 Congress has sold-out, however, to meet the demand we have opened a second exhibit area which is already selling fast. This second area will also be located in the Vancouver Trade & Convention Centre and will be found in a high traffic area near the registration desks, table clinics and poster presentations. We are receiving exhibit space applications on a daily basis.

Registration forms for FDI '94 are also accumulating daily. On the Canadian front, we have received a great deal of our registrations from the BC dentists and are now beginning to see registrations come in from all across Canada. Our international registrations are doing extremely well with many dentists registering and reserving spaces for limited attendance sessions as well as booking hotel rooms. The international dental professionals are eager to participate and we're confident the international component of the Congress will be strong.

We are pleased with the enthusiasm that has begun to spread throughout not only Canada but now the USA and into the farthest reaches of the globe. We are anticipating a most outstanding '94 Congress.

If you have not sent in registrations for your dental team – don't delay. Limited attendance courses are filling up quickly as well as hands-on courses and live-tv presentations. There have also been many requests for room reservations throughout the Vancouver area. **It is with a sense of urgency that you should register now** to ensure your space for lecture sessions and hotel accommodations.

As we look toward a new year and prepare for the Congress we hope that you will plan now to join us. We look forward to welcoming you to FDI '94 in Vancouver next October 2 - 8.

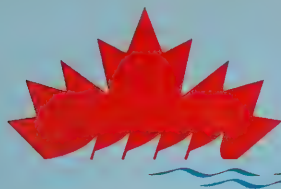
Enjoy the holidays!

Michel Jahjah, D.D.S.
General Chairman
FDI 1994 Organizing Committee
c/o Canadian Dental Association
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Sessions include:

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- Restorative Procedures
- Practice Management
- Restorative Dentistry
- Periodontics

Hands-On Courses and Live Television Presentations —

Highlights of the 1994

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Topics include:

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- Care/Sharpening of Perio Instruments
- X-Rays
- Scaling/Root Planing
- CPR
- Computers
- Endodontics
- Periodontal Instrumentation Workshop
- Aesthetics
- Electro-Surgery
- Dental Materials
- Implants
- Provisional Restoration

Social Events

- Dinner Cruise
- Opening Ceremony
- International Evening
- Discover the Orient
- Salmon Barbecue/ Logging Show
- FDI Ball



Children's Program

- Aquarium and Stanley Park
- Science World/ OMNIMAX Theatre
- North Shore Excursion

Visits & One-Day Tours

- Vancouver City Tour & Granville Island
- Scenic Harbour Cruise
- Salmon Fishing
- North Shore & Grouse Mountain
- Vancouver Aquarium: Breakfast with the whales
- A Day in Victoria
- Royal Hudson Steam Train & Britannia Excursion
- Whistler Mountain Day Trip

Pre- and Post- Congress Tours

- Alaska Cruise
- Australia & New Zealand
- The Canadian Rocky Mountains
- France
- Hawaii
- Los Angeles

Special Activities

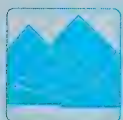
- Fun Run & Walk
- Golf

Pre and Post Congress Tours FDI '94



ALASKA (September 24 - October 1, 1994)

A memorable 7 night cruise to Alaska aboard Holland America's M.S. Westerdam. Heading up the inside passage, enjoy many delightful ports of Ketchikan (Alaska's first city), Juneau (Alaska's capital) and Glacier Bay (where the mighty glaciers will take your breath away). A trip of a lifetime!



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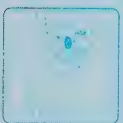
HAWAII (October 7 - 14, 1994)

Enjoy a fabulous 8 day/7 night vacation in Hawaii on the island of Oahu. You can stay at the Hilton Hawaiian Village or at the Pacific Beach Hotel, both situated on the beautiful Waikiki beach. A perfect tour for those wishing to relax and enjoy the magnificent view of Hawaii.



LOS ANGELES (October 10 - 13, 1994)

Enjoy a marvelous 4 day/3 night cruise aboard Holland America's M.S. Westerdam from Vancouver to Los Angeles along the Canadian and U.S. coast. Since the cruise departs on October 10th, this is the perfect tour for those wishing to do some post-conference sightseeing in Vancouver.



AUSTRALIA AND NEW ZEALAND (October 7 - 21, 1994)

An incredible 15 day/14 night post-conference tour "down-under". In Australia, visit Cairns, the great Barrier Reef, the rain forests, Sydney, the Blue Mountains and go on a wine tour. In New Zealand, see the Coromandel Peninsula and Rotorua thermal springs. You will also have the opportunity to stay either on a sheep, kiwi fruit or cattle farm for two nights. Each farm will host 2 couples from our group - a sure way to enjoy local New Zealand hospitality. From here, optional stopovers for 4 days/3 nights in either Fiji or Hawaii.

The Canadian Dental Association Out-of-Country Seminars

ISRAEL (February 16 - 28, 1994)

In collaboration with the Israel Dental Association

This unique 13-day tour to Israel takes you to the modern metropolis of Tel-Aviv and into the ancient ports of Jaffa, Acco, Haifa and Caesarea. You will travel through the lush region of Galilee to admire Mount Hermon. You will also visit the Dead Sea. Finally, you will ascent to Massada, the last stronghold of the Jewish Zealots against the Romans, standing as a memorial to this day.

TURKEY (April 15 - 28, 1994)

In collaboration with the Turkish Dental Association

This unforgettable 14-day journey will take you to the former Ottoman Empire as well as to the modern city of Istanbul. Your voyage will let you discover ancient marble temples built in honor of the gods and stirring architecture reminiscent of times long past. Pammukkale, Ankara, Cappadocia, Antalya, Kusadasi and Ephesus are among the numerous sites that you will enjoy on this unforgettable trip.

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AIDS and Dentistry: A Retrospective Analysis Of the Florida Case

John Hardie, BDS, M.Sc., FRCD(C)

Vancouver

Introduction

It is commonly accepted that AIDS, the Acquired Immune Deficiency Syndrome, has a blood-borne route of transmission and is often accompanied by characteristic oral manifestations. Understandably, this deadly disease has had a profound effect on the practise of dentistry. However, its influence escalated dramatically in the summer of 1990 with the publication of a report suggesting that the Human Immunodeficiency Virus (HIV) was transmitted from a Florida dentist to a patient during an invasive surgical procedure. This announcement led to a frenzy of media activity, debates convened by the U.S. Centers for Disease Control (CDC), and the initiation of reactive policies by authoritative organizations.

The intervening three years have allowed researchers to complete objective assessments of the possible routes of HIV transmission from the dentist, Dr. David Acer, to as many as six of his patients. This article will provide a similar analysis, based on recent reports and studies.

Background

On July 27, 1990, CDC announced that a young woman, Kimberly Bergalis (identified by CDC as patient A), may have been infected by HIV while undergoing dental surgery provided by Dr.

Acer, a Florida dentist with AIDS.¹ Subsequent investigation of the dentist's practice by CDC identified an additional seven patients who were HIV positive, and for whom Dr. Acer had also performed invasive procedures.²

As a convenience, the patients were labelled A, B, C, D, E, F, G and H. Three of the patients (D, F and H) had confirmed behavioral risk factors associated with HIV transmission,³ and were not — according to CDC — linked by genetic analysis to the dentist's strain of HIV.⁴ These patients were deemed by CDC to have an unknown source of HIV infection.² However, that left five patients who may have been infected by the dentist. Of the five, four (A, B, E and G) had no confirmed risk activities for HIV infection, such as IV drug use, sexual contact with a homosexual/bisexual male, receipt of contaminated blood, or sexual contact with an individual having such risk factors.⁴ Furthermore, genetic studies linked these patients to the dentist's strain of HIV.⁴ (Although patient C had unconfirmed high-risk activities, there was no documented behavioral exposure to HIV, and a genetic link to the dentist's strain of HIV was established.⁴)

Based on the absence of known behavioral exposure and the genetic similarities between the respective strains of HIV, in June 1991 CDC concluded that five pa-

tients (A, B, C, E and G) became infected with HIV while being treated by a dentist with AIDS.⁴

The GAO Investigation

CDC's conclusion was significant. However, despite public concerns, it certainly should have been validated before any alterations to established and traditional standards of dental practice were introduced. This concept was recognized by the United States General Accounting Office (GAO), which commissioned a study to assess the methods and evidence used by CDC in reaching its findings. This study's report was released September 29, 1992. What follows is a synopsis of a 50-page document entitled, "AIDS: CDC's Investigation of HIV Transmission By a Dentist."²

The GAO study began in November 1991 and concluded in June 1992. It was intended to answer four questions:

1. Did the dentist transmit HIV to his patients?
2. How did the HIV transmission occur?
3. Were CDC's methods sound?
4. Does CDC's evidence adequately support the Centers' findings?

GAO's report consists of three major sections — The Epidemiologic Data, The Genetic Analysis, and The Dental Practice.

TABLE I
Hierarchy Of Risk Factors For Males

1. Homosexual or bisexual contact	(65 %)
2. Intravenous drug use	(19 %)
3. Homosexual or bisexual contact and intravenous drug use	(7 %)
4. Heterosexual contact ■ sex with person having identified risk ■ sex with HIV-positive person, risk not specified	(2 %) (0.4%)
5. Receipt of blood transfusion, blood components, or tissue	(2 %)
6. Hemophilia or coagulation disorder	(1 %)
7. Other or undetermined	(3 %)

TABLE II
Hierarchy Of the Risk Factors For Females

1. Intravenous drug use	(51 %)
2. Heterosexual contact ■ sex with person having identified risk ■ sex with HIV-positive person, risk not specified	(29 %) (4 %)
3. Receipt of blood transfusion, blood components, or tissue	(8 %)
4. Other or undetermined	(7 %)

Note: The percentages in Tables I and II reflect the number of AIDS patients having particular risk factors. These percentages are not the same in Canada, e.g. among adult males with AIDS, 83 per cent have homosexual or bisexual contact and only two per cent have intravenous drug use.

The Epidemiologic Data

According to the GAO report,² the purpose of CDC's epidemiologic investigation was to determine which of the HIV-positive patients had no risk factors apart from those potentially attributable to Dr. Acer's dental practice. To determine this, CDC employed a hierarchy of risk factors for males (Table I) and females (Table II). If, on questioning, a patient admitted to an activity at the top of the list, further questioning was discontinued. Therefore, other factors would not necessarily be identified. In addition to personal interviews with HIV-positive patients, CDC conducted — when necessary — interviews with their acquaintances, families, and health care providers. Using these techniques, CDC identified four patients (A, B, E and G) for whom the only potential for exposure appeared to involve the dentist's virus. Although the GAO

report praises CDC for the thoroughness and competence of its epidemiologic data collection, a number of problems inherent in the analysis of such information are identified:

The epidemiologic investigation attempts to "prove the negative." It is almost impossible to prove that these four patients did not contract HIV from a source other than the dentist.

The behaviors that spread HIV (sexual — mainly homosexual — activity and I.V. drug use) are not readily admitted to and difficult to document.

The patients had a financial incentive via monetary damage claims to deny other risk factors.

The GAO report concludes that, by itself, the identification of four patients with no other apparent high-risk factors does not lead necessarily to the conclusion that the dentist was the source of the virus.

The Genetic Analysis

HIV mutates over a period of time. This results in the virus having considerable genetic variability both within and between individuals.² Although each HIV positive person will have multiple strains of HIV, people sharing a common source of infection (sex partners, mothers and their offsprings, for example) have more closely related strains than people without a direct infection link.⁴ This concept, via a series of innovative laboratory procedures and complex statistical analyses, was used by CDC to "strongly suggest" that five patients became infected with HIV while being treated by Dr. Acer, who had AIDS.²

According to the GAO report, CDC's genetic analysis appears generally to have been performed in a competent manner.² However, it does identify a number of problematic areas:

Genetic sequencing is incapable of demonstrating that one specific person infected another specific person, or that two individuals share the same strain of HIV. Genetic sequencing is limited to demonstrating the similarities (or dissimilarities) in HIV strains among individuals.

Expert judgment and statistical techniques are required to determine if individuals share a common source of infection.

The "Florida Case" marked the first time that CDC had attempted to use genetic analysis to identify common sources of HIV infection. Thus, the laboratory procedures, expert judgments, and statistical techniques may not have been sufficiently refined.

The control groups used by CDC did not properly represent the various reasons why genetic change in HIV may exist, such as the duration of infection, stage of disease, therapy undergone, immunologic status, and source of infection. While the effect of this weakness among the control groups could not be identified, the GAO report suggests that it would favor linking — albeit unfairly — the dentist and the patients.

CDC were not able to determine how similar the HIV sequences in

two individuals must be before stating that they shared a common source of infection. On this basis, CDC have admitted that their conclusion linking Miss Bergalis's HIV infection to Dr. Acer was "highly tentative," and they have been adversely criticized for the alarm and fear that their announcement created.

Using genetic analysis, CDC linked patient C to the dentist. Having established a similar relationship with patients A, B, E and G, they then stated that their investigation strongly suggested that the five patients were infected by Dr. Acer, without providing additional statistical information concerning the probability that these conclusions were correct.

CDC created a potential for bias by clearly identifying which samples of blood belonged to the dentist and which belonged to patient A.

CDC decided that if the variable regions in the HIV gene were similar in different individuals, these individuals likely shared a common source of infection. However, the GAO report recognizes that other researchers have stated that a better measure might be to assess the stable or non-variable regions of the HIV gene, i.e. if these areas differ between individuals, it would suggest that they have different sources of infection.

Although the GAO report praises the innovative genetic studies conducted by CDC, it is critical of CDC having — at times — no established criteria on which to base research decisions.

The Dental Practice

As a consequence of their epidemiologic and genetic studies, CDC established that five of Dr. Acer's patients had HIV strains closely related to his, that none of these patients had a confirmed exposure to HIV, and that all of them had been treated by Dr. Acer. By investigating the dental practice, CDC hoped to determine how the virus was transmitted to the patients, assuming, of course, that the source of the infection was Dr. Acer and/or the practice. The potential modes of HIV transmission were identified by CDC as: sexual

contact with Dr. Acer, contact with contaminated equipment, or direct contact with Dr. Acer's blood, either accidentally or intentionally.

Apart from advocating that CDC should have had a dentist on the team that interviewed Dr. Acer, the GAO report is sympathetic to the problems experienced by CDC in this phase of their investigation. For example, Dr. Acer's practice was sold prior to CDC's actual inspection of the premises. When the inspectors arrived, the office had been remodelled, much of the equipment replaced, the appointment books destroyed, and the original staff had left. In addition, there are inherent risks in relying on the recollections of patients and staff about usually normal and often uneventful dental procedures that occurred one or more years previously. The GAO report recognizes these difficulties while describing the efforts taken by CDC to identify a route of transmission:

Sexual Contact

Via interviews with the five patients and the dental staff, CDC was convinced that sexual contact with Dr. Acer was not the mode of transmission.

Contaminated Equipment

CDC provided five reasons why contaminated equipment was an unlikely source of transmission.

- HIV is thought to be spread via direct contact with blood or semen. The amount of HIV likely to be present on dental equipment and the adjacent environment is not conducive to the lengthy survival of HIV.
- HIV is a fragile virus and is destroyed by ordinary disinfection or sterilization.
- Dr. Acer's practice had no history of outbreaks of other infectious diseases such as hepatitis B.
- The five patients received different treatments over an extended period of time. They did on occasion share the same visit day, but not necessarily the same instruments. CDC concluded that there was nothing unusual about this visitation pattern, and that it could have been experienced by any five patients picked at random.

- The strains of HIV infecting the patients were not as similar to each other as they were to the strain infecting the dentist. The opposite would be expected if transmission was via contaminated equipment.

Intentional Blood Exposure

CDC explored the possibility that Dr. Acer had deliberately infected patients by inoculating them with his blood. The infected patients were awake during all dental procedures and were unaware of Dr. Acer performing different or unusual procedures. CDC's interviews of Dr. Acer's family, staff, and health care providers identified no evidence of abnormal or vindictive mental or physical behavior. Although a friend of Dr. Acer stated in a deposition that Dr. Acer may have intentionally infected patients to gain attention for AIDS, the Attorney General's office in Florida declined to pursue a criminal investigation due to an absence of any supporting evidence. CDC concluded that there was insufficient proof to substantiate the concept that Dr. Acer had intentionally infected the five patients.

Accidental Blood Exposure

By a process of eliminating the other routes of transmission, CDC decided that the patients were most likely infected during an accidental but direct exposure to Dr. Acer's blood. While admitting that there is no direct proof to support this claim, CDC offered three pieces of indirect evidence.

- Health care workers have a history of injuring themselves while conducting occupationally related tasks. However, neither Dr. Acer, his staff, nor the infected patients were aware of him suffering a severe cut or similar injury.
- On occasion there is direct contact between the occupational injuries sustained by health care workers and a patient's wound, creating the potential for direct blood to blood contact, and hence the transmission of a blood-borne pathogen. Since it is not known how often Dr. Acer sustained injuries, it is not known how often the potential for a con-

tact transmission may have existed. He did wear gloves routinely after 1987, and while gloves would not prevent sharps induced injuries they might reduce the amount of blood available for a contact transmission.

- Contact transmissions from occupationally-derived injuries have resulted in blood-borne pathogens (principally the hepatitis B virus) being transmitted to patients. Such a transmission is dependent on the virulence and amount of the pathogen present, and the frequency of exposure to it, and inversely proportional to host resistance. In this case, CDC believed that Dr. Acer did not have a virulent strain of HIV. However, he did have AIDS, and while this may be associated with a higher than normal titre of HIV in peripheral blood, CDC were unclear as to what his titre might have been between 1987 and 1989, when the transmissions to patients were supposed to have occurred.

The GAO report suggests that, based on the epidemiologic data, the genetic analysis, and the practice investigation, the most likely route of transmission was via accidental direct contact with the dentist's blood. The report, however, emphasizes that since the precise route of transmission remains unknown, the Florida case should not be used as a model on which to base policies and procedures designed to prevent future such transmissions.

Other Pertinent Studies

In addition to the GAO report, there are four other articles that discuss the purportedly dental transmission of HIV.

The first article, by Gooch et al.,⁵ assessed the possibility of transmission occurring via cross-contamination from patient to patient through contact with such items as dental handpieces, prophylaxis angles, anesthetic cartridges, and disposable hypodermic needles. Gooch and her co-workers reconstructed appointment books and specific daily treatments from the records of five HIV-infected patients and 180 other patients who

were HIV negative. The treatment dates for these patients extended from November 1987 until July 1989, i.e. during the period when the transmissions were supposed to have occurred. The investigators were able to identify dates when at least two of the five infected patients were seen on the same day. On one of these occasions, the treatments may have involved the use of a high-speed hand piece and local anesthetic, and on another the use of prophylaxis angles. Gooch et al postulated that the infrequency with which the suspect devices might have been shared by infected patients argues against cross-contamination from the instruments. In fact, there were 43 dates when the five HIV-infected patients shared same-day visits with 78 non-HIV infected patients. On 29 occasions, 41 non-HIV infected patients might have required the use of high-speed handpieces, prophylaxis angles, and anesthetic syringes. The investigators were impressed by the lack of HIV transmission in this group.

This analysis, combined with the finding that anesthetic needles or carpules were never reused on different patients, permitted Gooch et al to conclude that there was no evidence to support the concept of patient-to-patient transmission of HIV via dental handpieces, prophylaxis angles, disposable needles or anesthetic carpules.

It is worthwhile to report that Dr. J. Molinari has commented favorably on the above study. He has indicated⁶ that it is a timely, well-organized investigation whose findings should be included in any debate on the potential of handpieces to act as vectors for blood-borne infections. He also stresses that infection control practices should be based on scientific information, properly applied.

The second pertinent article was published by Smith and Waterman.⁷ (It actually appeared in the same edition of *Science* as the study by Ou et al,⁴ which was used by CDC as the genetic proof of HIV transmission from Dr. Acer to five of his patients.) Smith and Waterman⁷ presented a detailed assessment of the Ou et al study, and

were constructively critical of the weaknesses inherent in the statistical analyses and interpretations made by Ou. They emphasized that since the genetic analysis of HIV transmission is new, criteria and standards must be established before these early, and perhaps flawed, data and interpretations are used as the basis for formulating public opinion and policies. To illustrate this dilemma, they noted that in instances of known transmission of HIV from mother to child, the viral strains in the children have shown no greater similarities to the strains of their natural mothers than to those of unrelated mothers.

The third relevant study was by De Bry et al.⁸ They reassessed the study by Ou⁴ using different viral sequences and statistical criteria. The results, while not discounting the dental transmission hypothesis, indicated that the HIV genetic sequences in the five positive patients could also have occurred independently of the dentist as natural variants of HIV in the local community. De Bry and his co-workers stressed that current techniques for HIV genetic analysis have a number of inconsistencies, and that until these are resolved the transmission of HIV via dental treatment must remain a hypothesis.

The previous two studies illustrate the risks incurred in basing policies and procedures on innovative research that has no established criteria or standards. It is, however, valid to consider the experience of HIV transmission in other health care disciplines.

The fourth pertinent study relates to one conducted by the CDC. In May 1992, CDC⁹ released the results of an investigation of 15,795 patients who had been treated in 32 different health care settings where HIV-positive health care workers practised. This treatment included invasive surgical procedures. CDC were unable to confirm even one example of HIV transmission from worker to patient. This illustrates the extremely low, if not negligible, risk of HIV transmission to patients during health care procedures. This concept is supported by estimates es-

established by CDC and the American Dental Association (ADA), which suggest that in 1990, 378 HIV/AIDS surgeons and 1,404 HIV/AIDS dentists were in practice. ADA indicated that the HIV/AIDS dentists may have performed more than 4-million procedures.² Yet, to date, Dr. Acer's practice remains the only one in which it is alleged that HIV transmission has occurred.⁹

Other Pertinent Comments

The Florida case has been discussed by Dr. P. Duesberg in a recent, extensive treatise criticizing the accepted relationship between HIV and AIDS.¹⁰ Duesberg employs convincing arguments to state that the sexual and blood-borne routes of transmission for HIV are remarkably inefficient, and that the most effective method for its transmission is perinatally, i.e. from infected mother to child. In addition, he advances the ideas that HIV is not inherently pathogenic, that it is a quasi-marker of genetic inheritance, that it is an old (not a new) microbe, and that it has a relatively constant incidence in the American population, affecting one-million individuals or 0.4 per cent of the total population. He notes that the incidence of HIV-positive individuals among 1,100 of Dr. Acer's patients was also 0.4 per cent (four to six out of 1,100), and that the incidence of HIV positives among 15,795 patients from 32 HIV-positive physicians was 0.5 per cent (84 out of 15,15,795). Duesberg uses these facts to suggest that the incidence of HIV infections among Dr. Acer's patients and among the patients of a number of physicians is — for all practical purposes — identical to the national incidence of the virus in the U.S.A. If this is true, and if perinatal transmission of HIV is efficient, then according to Duesberg, the most likely source of infection for Kimberly Bergalis was her mother. Indeed, Duesberg believes that most, if not all, HIV-positive but otherwise healthy adolescents acquire the virus from their mothers. It should be added that Duesberg does not believe that HIV killed Kimberly Bergalis, since he considers HIV to be nonpatho-

genic. Instead, he relates the sequence of events as follows: Kimberly Bergalis developed candidiasis and a transient pneumonia 17 and 24 months respectively after having had two molars extracted by Dr. Acer. Following Dr. Acer's public disclosure that he had AIDS, Bergalis was tested for HIV, found to be positive, and CDC concluded that she had contracted AIDS from Dr. Acer. Subsequent to the diagnosis, Bergalis was given AZT — a cytotoxic DNA chain terminator. This, in turn, according to Duesberg, caused her to lose weight and hair, to become anemic, to suffer from muscle atrophy, and to have uncontrollable systemic candidiasis resulting in her death from chronic AZT toxicity in December 1991. To prove that HIV caused Kimberly Bergalis' death, a controlled study would be necessary comparing the mortality of women with yeast infections with and without HIV antibodies, and with and without AZT therapy. These studies have not been performed, and according to Duesberg, it is pure speculation that HIV killed Kimberly Bergalis.¹⁰

A slightly different approach to the Florida case has been taken by Dr. Root-Bernstein in a recent 1993 publication.¹¹ Similar to Duesberg, Root-Bernstein is suspicious about the accepted role of HIV in causing AIDS. He believes that a number of factors may be responsible for the profound immunosuppression associated with AIDS. Accordingly, he has directed attention to probable causes of the immune deficiency present in Kimberly Bergalis. For example, he criticizes CDC for not verifying that Bergalis did not indulge in intravenous drug use or sexual activity, especially anal intercourse. This could be pertinent, since Bergalis was reported to have a sexually-transmissible papilloma virus infection.¹² Root-Bernstein questions why CDC did not investigate whether Bergalis consumed non-intravenous drugs; was bulimic, anorexic or anemic; used antibiotics, steroid creams, or tranquilizers; or had hepatitis or mononucleosis — all factors known to induce immunosuppression. Since appropriate questions were not asked, nor suitable tests

performed, Root-Bernstein believes that there is reason to doubt that Dr. Acer was the source for transmitting AIDS to Kimberly Bergalis and other patients.¹¹

Further attention has been given to Dr. Acer deliberately injecting patients with his HIV-positive blood. It is now appreciated that in AIDS patients, on average, one in 1,500 to 8,000 leukocytes are infected by HIV.¹³ The infection involves integration within the genome of the involved leukocyte and, as a result, there is typically no free HIV in the bloodstream of AIDS patients.¹⁰ Accordingly, a deliberate exposure would have involved the infusion of large amounts of blood at once, or small amounts of blood on a number of occasions, to many patients. It is inconceivable, under such circumstances, that Dr. Acer's activities would not have been discovered, and therefore unlikely that he deliberately transmitted HIV to his patients in this way.

These comments and the previous studies justify Root-Bernstein's statement that the Florida case is not a reasonable model on which to develop public policies pertaining to the prevention of HIV transmission.¹¹

Conclusion

CDC appear to have conducted a thorough and, at times, innovative investigation of HIV transmission by a dentist. However, there are justifiable reasons for questioning the methods employed by CDC, and the validity of the evidence used by the Centers to support their findings. Nevertheless, if it is assumed that the transmission did occur via accidental contact with the dentist's blood, there are some interesting implications for the practice of dentistry. For example, handpiece and instrument sterilization would not prevent such a route of transmission, neither would the wearing of various barriers such as gloves, masks, and gowns. Indeed, since CDC are unable to identify the nature of the presumed accident, planning for its prevention is difficult if not impossible. Ironically, the only way of guaranteeing to patients that such

Continued on page 1000

TORADOL®

10 mg tablets & 30 mg/mL IM injections KETOROLAC TROMETHAMINE

Effectively treating acute pain

TORADOL® (ketorolac tromethamine) 10 mg tablets

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THERAPEUTIC CLASSIFICATION: Analgesic Agent

ACTION:

Toradol (ketorolac tromethamine) is a non-steroidal anti-inflammatory drug (NSAID) that exhibits analgesic activity mediated by peripheral effects. Ketorolac inhibits the synthesis of prostaglandins through inhibition of the cyclo-oxygenase enzyme system. At analgesic doses, it has minimal anti-inflammatory and antipyretic activity. Pain relief is comparable following the administration of ketorolac by intramuscular or oral routes. The peak analgesic effect occurs at 2-3 hours post-dosing with no evidence of a statistically significant difference over the recommended dosage range. The greatest difference between large and small doses of Toradol administered by either route is in the duration of analgesia. Ketorolac tromethamine is rapidly and completely absorbed when administered by either the oral or the intramuscular route. The pharmacokinetics are linear following single and multiple dosing. Steady state plasma levels are attained after one day of Q.I.D. dosing. Following oral administration, peak plasma concentrations of 0.7 to 1.1 µg/mL occurred at an average of 44 minutes after a single 10 mg dose. The terminal plasma elimination half-life ranged between 2.4 and 9.0 hours in healthy adults, while in elderly subjects (mean age = 72 years), it ranged between 4.3 and 7.6 hours. A high fat meal decreased the rate, but not the extent, of absorption of oral ketorolac tromethamine.

The use of an antacid had no effect on the pharmacokinetics of ketorolac. Following intramuscular administration, peak plasma concentrations of 2.2 to 3.0 µg/mL occurred an average of 50 minutes after a single 30 mg dose. The terminal plasma half-life ranged between 3.5 and 9.2 hours in young adults and between 4.7 and 8.6 hours in elderly subjects (mean age = 72 years). In renally impaired patients there is a reduction in clearance and an increase in the terminal half-life of ketorolac tromethamine (see table below). The primary route of excretion of ketorolac tromethamine and its metabolites (conjugates and the p-hydroxy metabolite) is in the urine (91.4%) with the remainder (6.1%) being excreted in the feces. More than 99% of the ketorolac in plasma is protein bound over a wide concentration range. The hemodynamics of anaesthetized patients were not altered by parenteral administration of Toradol.

THE INFLUENCE OF AGE, LIVER AND KIDNEY FUNCTION ON THE CLEARANCE AND TERMINAL HALF-LIFE OF TORADOL IM¹ AND ORAL²

TYPES OF SUBJECTS	TOTAL CLEARANCE (in L/h/kg) ³		TERMINAL HALF-LIFE (in hours)	
	IM MEAN (range)	ORAL MEAN (range)	IM MEAN (range)	ORAL MEAN (range)
Normal Subjects IM (n=54) Oral (n=77)	0.023 (0.010-0.046)	0.025 (0.013-0.050)	5.3 (3.5-9.2)	5.3 (2.4-9.0)
Healthy Elderly Subjects IM (n=13), Oral (n=12) (mean age = 72, range = 65-78)	0.019 (0.013-0.034)	0.024 (0.018-0.034)	7.0 (4.7-8.6)	6.1 (4.3-7.6)
Patients with Hepatic Dysfunction IM and Oral (n=7)	0.029 (0.013-0.066)	0.033 (0.019-0.051)	5.4 (2.2-6.9)	4.5 (1.6-7.6)
Patients with Renal Impairment IM and Oral (n=9)(serum creatinine 1.9-5.0 mg/dL)	0.014 (0.007-0.043)	0.016 (0.007-0.052)	10.3 (8.1-15.7)	10.8 (3.4-18.9)
Renal Dialysis Patients IM (n=9)	0.016 (0.003-0.036)		13.6 (8.0-39.1)	

¹ Estimated from 30 mg single IM doses of ketorolac tromethamine

² Estimated from 10 mg single oral doses of ketorolac tromethamine

³ Litres/hour/kilogram

INDICATIONS:

Oral Route: Orally administered Toradol (ketorolac tromethamine) is indicated for the short-term management of mild to moderately severe pain, including post-surgical pain (such as general, orthopaedic and dental surgery), acute musculoskeletal trauma pain and post-partum uterine cramping pain.

Intramuscular Route: Intramuscular injection of Toradol is indicated for the short-term management of moderate to severe pain, including pain following major abdominal, orthopaedic and gynecological operative procedures.

CONTRAINDICATIONS:

Hypersensitivity: Like other non-steroidal anti-inflammatory drugs, Toradol (ketorolac tromethamine) has been associated with hypersensitivity reactions. Toradol should not be used when there is a known or suspected hypersensitivity to the drug. Because of the possibility of cross-sensitivity, Toradol should not be used in patients with the complete or partial syndrome of nasal polyps, angioedema, bronchospastic reactivity (e.g. asthma) or other allergic manifestations to acetylsalicylic acid (ASA) or other non-steroidal anti-inflammatory drugs. Severe and fatal anaphylactoid reactions have occurred in such individuals.

Gastrointestinal: As with other NSAIDs, Toradol also should not be used in patients with peptic ulcer or active inflammatory disease of the gastrointestinal system. Severe and fatal reactions have occurred in such individuals.

WARNINGS:

The long-term administration of Toradol (ketorolac tromethamine) is not recommended. The most serious risks associated with NSAIDs including Toradol are:

Gastrointestinal Ulcerations, Bleeding and Perforation: Serious gastrointestinal toxicity, such as bleeding, ulceration, and perforation, can occur at any time, with or without warning symptoms, during therapy with non-steroidal anti-inflammatory drugs. To date, studies with NSAIDs have not identified any subset of patients not at risk for developing peptic ulceration and bleeding. Post-marketing experience with Toradol suggests that there may be a greater risk of gastrointestinal ulcerations, bleeding, and perforation in the elderly, and most spontaneous reports of fatal gastrointestinal events are in the aged population.

LONG-TERM USE OF TORADOL: The oral use of Toradol 10 mg QID on a long-term basis is associated with more gastrointestinal tract adverse effects than is ASA 650 mg QID.

In a clinical trial in 823 patients with chronic pain states comparing Toradol tablets 10 mg QID (553 patients) with ASA 650 mg QID (270 patients), during the first week there was a 2.4% dropout rate because of upper GI complaints in the Toradol tablets treated patients as compared with 0.4% rate in the ASA treated group. After the first 2 weeks, the dropout rates due to GI pain or discomfort were comparable in both treatment groups. The time-adjusted percentages, which are not statistically significantly different, of patients who developed ulcers or upper GI bleeding are as follows:

INTERVAL	KETOROLAC	ASA
≤ 3 months	0.69*	0*
≤ 6 months	1.59*	0.73*

*There was no statistically significant difference between ketorolac and ASA at either of the intervals tested.

PHYSICIANS SHOULD CAREFULLY WEIGH THE POTENTIAL RISKS AND BENEFITS OF USING TORADOL TABLETS ON A LONG-TERM BASIS. PATIENTS SHOULD BE INSTRUCTED TO WATCH FOR SIGNS OF SERIOUS GI ADVERSE EVENTS AND THEY SHOULD BE MONITORED MORE CLOSELY THAN IF THEY WERE ON ANOTHER NSAID.

Renal Toxicity: The following renal abnormalities have been associated with Toradol and other drugs that inhibit renal prostaglandin biosynthesis: acute renal failure, nephrotic syndrome, interstitial nephritis, renal papillary necrosis.

Haemorrhage: Postoperative haematomas and other symptoms of wound bleeding have been reported in association with the perioperative use of intramuscular Toradol. If Toradol is to be administered to patients who have coagulation disorders or who are receiving drug therapy that interferes with haemostasis, careful observation is advised.

Hypersensitivity Reactions: The possibility of severe or fatal hypersensitivity reactions should be considered, even for patients with no known history of previous exposure or hypersensitivity to Toradol or other NSAIDs. As with other NSAIDs, patients should be questioned for history of allergy to NSAIDs or ASA or for the syndrome consisting of nasal polyps, ASA allergy and asthma before prescribing Toradol. Asthmatic patients with triad asthma (the syndrome of nasal polyps, asthma and hypersensitivity to ASA or other NSAIDs) may be at particular risk for severe hypersensitivity reactions.

Other NSAIDs: Ketorolac tromethamine is not recommended for concurrent use with other NSAIDs because of the potential for additive side effects.

Use in Pregnancy and Lactation: The administration of ketorolac tromethamine is not recommended during pregnancy or lactation. After 1 day at 10 mg QID, oral dosing, Toradol has been detected in the milk of lactating women at a maximum concentration of 7.9 ng/mL.

Use in Labour: Ketorolac tromethamine is not recommended for use as an obstetrical preoperative medication or for obstetrical analgesia because of the known effects of NSAIDs on uterine contraction and fetal circulation.

Use in Children: Safety and efficacy in children have not been established. Therefore, Toradol is not recommended for use in children under age 16.

Use in the Elderly: Because ketorolac is cleared somewhat more slowly by the elderly (See PHARMACOKINETICS) who are also more sensitive to the gastrointestinal and renal effects of NSAIDs (See WARNINGS and PRECAUTIONS), extra caution and the lowest effective dose (See DOSAGE AND ADMINISTRATION) should be used.

PRECAUTIONS:

Physicians should be alert to the pharmacologic similarity of Toradol (ketorolac tromethamine) to other non-steroidal anti-inflammatory drugs that inhibit cyclo-oxygenase. Toradol is not an anesthetic agent and possesses no sedative or anxiolytic properties.

Gastrointestinal Effects: Close medical supervision is recommended in patients prone to gastrointestinal tract irritation, particularly those with a history of peptic ulcer, diverticulosis or other inflammatory disease of the gastrointestinal tract. In these cases, the physician must weigh the benefits of treatment against the possible hazards. Patients taking any NSAID including ketorolac tromethamine should be instructed to contact a physician immediately if they experience symptoms or signs suggestive of peptic ulceration or gastrointestinal bleeding. These reactions can occur at any time during the treatment. If peptic ulceration is suspected or confirmed, or if gastrointestinal bleeding occurs, ketorolac tromethamine should be discontinued and appropriate treatment instituted with close patient monitoring.

Renal Effects: As with other drugs that inhibit prostaglandin biosynthesis, elevations of blood urea nitrogen (BUN) and creatinine have been reported in clinical trials with (ketorolac tromethamine). Since ketorolac tromethamine and its metabolites are excreted primarily by the kidney, the following precautions are indicated for patients with: **Severely impaired renal function** (serum creatinine values greater than 5 mg/dL, 442 µmol/L): Toradol is not recommended; **Moderately impaired renal function** (serum creatinine values ranging from 1.9 to 5.0 mg/dL, 168 to 442 µmol/L) - The total daily dose of ketorolac tromethamine should be reduced by half. In these patients the rate of ketorolac tromethamine clearance was reduced to approximately half of normal. Patients who are volume depleted may be dependent on renal prostaglandin production to maintain renal perfusion and, therefore, glomerular filtration rate. In such patients, the use of drugs which inhibit prostaglandin synthesis has been associated with further decreases in renal blood flow. Predisposing factors include sepsis, impaired renal function, heart failure, liver dysfunction, diuretic therapy, and advanced age. Caution is advised if ketorolac tromethamine is used in such circumstances. Close monitoring of urine output, serum urea and serum creatinine is recommended until renal function recovers.

Hepatic Effects: Meaningful elevations (greater than 3 times normal) of serumtransaminases (glutamate pyruvate (SGPT or ALT) and glutamic oxalacetic (SGOT or AST)), occurred in controlled clinical trials in less than 1% of patients. If clinical signs and symptoms consistent with liver disease develop, or if systemic manifestations occur (e.g., eosinophilia, rash, etc.), ketorolac tromethamine should be discontinued. Patients with impaired hepatic function from cirrhosis do not have any clinically important changes in ketorolac tromethamine clearance. Studies in patients with active hepatitis or cholestasis have not been performed.

Fluid and Electrolyte Balance: Fluid retention and edema have been observed in patients treated with Toradol. Therefore, as with many other NSAIDs, the possibility of precipitating congestive heart failure in elderly patients or those with compromised cardiac function should be considered. Toradol should be used with caution in patients with cardiac decompensation, hypertension or other conditions which cause a predisposition to fluid retention.

Hematologic Effects: Ketorolac tromethamine inhibits platelet function and may prolong bleeding time. It does not affect platelet count, prothrombin time (PT) or partial thromboplastin time (PTT). Unlike the prolonged effects from ASA the inhibition of platelet function by ketorolac tromethamine is normalized within 24 to 48 hours after the drug is discontinued. Patients on full anti-coagulation therapy (e.g. heparin or dicumarol derivatives) may be at increased risk of bleeding if given Toradol concurrently. Thus, the benefit should be weighed against this risk. The concomitant use of Toradol and heparin (5000 U s.c. BID) appears to be associated with less risk (see DRUG INTERACTIONS). In patients receiving anticoagulants, the risk of intramuscular haematoma formation from Toradol IM injections may be increased. In post-marketing experience, postoperative wound haemorrhage has been reported with the use of Toradol. Therefore, caution should be exercised when strict haemostasis is critical. Toradol IM is

not recommended as a pre-operative or intra-operative medication because of the risk of excessive bleeding. Blood dyscrasias associated with the use of NSAIDs are rare, but could occur with severe consequences.

Infection: In common with other non-steroidal anti-inflammatory drugs, ketorolac tromethamine may mask the usual signs of infection.

DRUG INTERACTIONS:

Protein Binding: Toradol (ketorolac tromethamine) is highly bound to human plasma protein (mean 99.2%) and binding is independent of concentration. As ketorolac tromethamine is a highly potent drug and present in low concentrations in plasma, it would not be expected to displace other protein-bound drugs significantly. Therapeutic concentrations of digoxin, warfarin, acetaminophen, phenytoin, and tolbutamide did not alter ketorolac tromethamine protein binding.

Anticoagulant Therapy: Prothrombin time should be carefully monitored in all patients receiving oral anticoagulant therapy concomitantly with ketorolac tromethamine. Toradol IM given with two doses of 5000 U of heparin to 11 healthy volunteers resulted in a mean template bleeding time of 6.4 min (3.2-11.4 min) compared to a mean of 6.0 min (3.4-7.5 min) for heparin alone and 5.1 min (3.5-8.5 min) for placebo. The *in vitro* binding of warfarin to plasma proteins is only slightly reduced by ketorolac tromethamine (99.5% control vs. 99.3%) at plasma concentrations of 5 to 10 µg/mL.

Digoxin: Ketorolac tromethamine does not alter digoxin protein binding.

Salicylates: *In vitro* studies indicated that, at therapeutic concentrations of salicylates (300 µg/mL), the binding of ketorolac tromethamine was reduced from approximately 99.2% to 97.5% representing a potential two-fold increase in unbound Toradol plasma levels.

Enzyme Induction: There is no evidence, in animal or human studies, that ketorolac tromethamine induces or inhibits the hepatic enzymes capable of metabolizing itself or other drugs. Hence, it would not be expected to alter the pharmacokinetics of other drugs due to enzyme induction or inhibition mechanisms.

Probenecid: Concomitant administration of ketorolac tromethamine and probenecid results in the decreased clearance of ketorolac and a significant increase in ketorolac plasma levels (approximately three-fold increase) and terminal half-life (approximately two-fold increase).

Furosemide: Ketorolac tromethamine reduces the diuretic response to furosemide by approximately 20% in normovolemic subjects.

Lithium: Some NSAIDs have been reported to inhibit renal lithium clearance, leading to an increase in plasma lithium concentrations and potential lithium toxicity. The effect of ketorolac tromethamine on lithium plasma levels has not been studied.

Methotrexate: The concomitant administration of methotrexate and some NSAIDs has been reported to reduce the clearance of methotrexate, thus enhancing its toxicity. The effect of ketorolac tromethamine on methotrexate clearance has not been studied.

Morphine: Intramuscular Toradol has been administered concurrently with morphine in several clinical trials of postoperative pain without evidence of adverse interactions.

ADVERSE EVENTS:

TORADOL TABLETS: Short-Term Patient Studies - The incidence of adverse reactions in 371 patients receiving multiple 10 mg doses of Toradol (ketorolac tromethamine) for pain resulting from surgery or dental extraction during the post-operative period (less than 2 weeks) is listed below. These reactions may or may not be drug related. **Incidence between 4 and 9%:** **Nervous system** - somnolence, insomnia; **Digestive system** - nausea. **Incidence between 2 and 3%:** **Nervous system** - nervousness, headache, dizziness; **Digestive system** - diarrhea, dyspepsia, gastrointestinal pain, constipation. **Body as a whole** - fever. **Incidence 1% or Less:** **Nervous system** - abnormal dreams, anxiety, dry mouth, hyperkinesia, paresthesia, increased sweating, euphoria, hallucinations; **Digestive system** - anorexia, flatulence, vomiting, stomatitis, gastritis, gastrointestinal disorder, sore throat; **Body as a whole** - asthenia, pain, back pain; **Cardiovascular system** - vasodilatation, palpitation, migraine, hypertension; **Respiratory system** - cough increased, rhinitis, dry nose; **Musculo-skeletal system** - myalgia, arthralgia; **Skin and appendages** - rash, urticaria; **Special senses** - blurred vision, ear pain; **Urogenital system:** dysuria.

Long-Term Patient Study - The adverse reactions listed below were reported to be probably related to study drug in 553 patients receiving long-term oral therapy (approximately 1 year) with Toradol. **Incidence between 10 and 12%:** **Digestive system** - dyspepsia, gastrointestinal pain.

Incidence Between 4 and 9%: **Digestive system** - nausea, constipation; **Nervous system** - headache. **Incidence Between 2 and 3%:** **Digestive system** - diarrhea, flatulence, gastrointestinal fullness, peptic ulcers; **Nervous system** - Dizziness, somnolence; **Metabolic/Nutritional disorder** - edema. **Incidence 1% or Less:** **Digestive system** - eructation, stomatitis, vomiting, anorexia, duodenal ulcer, gastritis, gastrointestinal haemorrhage, increased appetite, melena, mouth ulceration, rectal bleeding, sore mouth; **Nervous system** - abnormal dreams, anxiety, depression, dry mouth, insomnia, nervousness, paresthesia; **Special senses** - tinnitus, taste perversion, abnormal vision, blurred vision, deafness, lacrimation disorder; **Metabolic/Nutritional disorder** - Weight gain, alkaline phosphatase increase, BUN increased, excessive thirst, generalized edema, hyperuricemia; **Skin and appendages** - pruritus, rash, burning sensation skin; **Body as a whole** - asthenia, pain, back pain, face edema, hernia; **Musculo-skeletal system** - arthralgia, myalgia, joint disorder; **Cardiovascular system** - chest pain, chest pain substernal, migraine; **Respiratory system** - dyspnea, asthma, epistaxis; **Urogenital system** - hematuria, increased urinary frequency, oliguria, polyuria; **Hemic and lymphatic** - Anemia, purpura.

TORADOL IM: The adverse reactions listed below were reported in Toradol IM clinical efficacy trials. In these trials patients (n=660) received either single 30 mg doses (n=151) or multiple 30 mg doses (n=509) over a time period of 5 days or less for pain resulting from surgery.

These reactions may or may not be drug related. **Incidence Between 10 and 13%:** **Nervous System** - somnolence; **Digestive system** - Nausea. **Incidence Between 4 and 9%:** **Nervous system** - headache; **Digestive system** - vomiting; **Injection site** - injection site pain. **Incidence Between 2 and 3%:** **Nervous System** - sweating, dizziness; **Cardiovascular system** - vasodilatation. **Incidence 1% or Less:** **Nervous system** - insomnia, increased dry mouth, abnormal dreams, anxiety, depression, paraesthesia, nervousness, paranoid reaction, speech disorder, euphoria, libido increased, excessive thirst, inability to concentrate, stimulation; **Digestive system** - flatulence, anorexia, constipation, diarrhea, dyspepsia, gastrointestinal fullness, gastrointestinal haemorrhage, gastrointestinal pain, melena, sore throat, liver function abnormalities, rectal bleeding, stomatitis; **Cardiovascular system** - hypertension, chest pain, tachycardia, haemorrhage, palpitation, pulmonary embolus, syncope, ventricular tachycardia, pallor, flushing; **Injection site** - injection site reaction; **Body as a whole** - asthenia, fever, back pain, chills, pain, neck pain; **Special senses** - taste perversion, tinnitus, blurred vision, diplopia, retinal haemorrhage; **Musculo-skeletal system** - myalgia, twitching; **Respiratory system** - asthma, cough increased, dyspnea, epistaxis, hiccup, rhinitis; **Skin and appendages** - pruritus, rash, subcutaneous hematoma, skin disorder; **Urogenital system** - dysuria, urinary retention, oliguria, increased urinary frequency, vaginitis; **Metabolic/nutritional disorders** - edema, hypokalemia, hypovolemia **Hemic and lymphatic system** - anemia, coagulation disorder, purpura.

Post-Marketing Experience: The following post-marketing adverse experiences, although rare (1% or less), have been reported for patients who have received either formulation of Toradol.

Renal events - acute renal failure, flank pain with or without haematuria and/or azotemia; **Hypersensitivity reactions:** bronchospasm, laryngeal edema, hypotension, flushing, rash, and anaphylactoid reactions, such reactions have occurred in patients with no prior history of hypersensitivity. **Gastrointestinal events** - gastrointestinal hemorrhage, peptic ulceration, gastrointestinal perforation; **Hematologic events** - postoperative wound haemorrhage, rarely requiring blood transfusion (see PRECAUTIONS), thrombocytopenia; **Central nervous system** - convulsions, abnormal dreams, hallucinations, hyperkinesia, hearing loss; **Cardiovascular** - pulmonary edema; **Dermatology** - Lyell's syndrome, Stevens - Johnson syndrome, exfoliative dermatitis, maculopapular rash.

OVERDOSAGE: The absence of experience with acute overdosage precludes characterization of sequelae and assessment of antidotal efficacy at this time. In a gastroscopic study of healthy subjects, daily doses of 360 mg given over an 8-hour interval for each of five consecutive days (3 times the highest recommended dose) caused pain and peptic ulcers which resolved after discontinuation of dosing.

DOSEAGE AND ADMINISTRATION:

Adults: Dosage should be adjusted according to the severity of the pain and the response of the patient. **Oral:** The usual oral dose of Toradol (ketorolac tromethamine) is 10 mg every 4 to 6 hours for pain as required. Doses exceeding 40 mg per day are not recommended. Toradol is recommended for short-term use only, i.e., for a maximum of a few weeks.

Parenteral: The recommended usual initial dose is 30 mg. Subsequent dosing may be 10 mg to 30 mg every 4-6 hours as needed to control pain. It is recommended that the administration of Toradol IM be limited to short-term therapy (not over 5 days) and the total daily dose should not exceed 120 mg.

This is because the risk of toxicity appears to increase with longer use at recommended doses (see WARNINGS and PRECAUTIONS). The administration of continuous multiple daily doses of Toradol IM has not been extensively studied. There has been limited experience with intramuscular dosing for more than 3 days since the vast majority of patients have transferred to oral medication or no longer required analgesic therapy after this time. In the initial post-operative period, more frequent dosing (e.g. every 2 hours) may be employed but the total daily dosing should not exceed 120 mg/day. If supplementary analgesia is required, a concomitant low dose of opiate can be used.

Patients under 50 kg, over age 65 years, or with less severe pain at baseline: the lower end of the dosage range (10-15 mg 4 times a day) is recommended.

Impaired Renal Function - Moderate - In patients with impaired renal function (serum creatinine values ranging from 1.9 to 5.0 mg/dL or 168 to 442 µmol/L), the total daily dose of Toradol should be reduced by half;

Severe - In patients with severely impaired renal function (serum creatinine values greater than 5 mg/dL or 442 µmol/L) Toradol is not recommended.

Conversion from Parenteral to Oral Therapy: Toradol tablets may be used either as monotherapy or as follow-on therapy to parenteral ketorolac. Toradol IM should be replaced by an oral analgesic as soon as feasible. When Toradol tablets are used as a follow-on therapy to parenteral ketorolac, the total combined daily dose of ketorolac (oral + parenteral) should not exceed 120 mg on the day the change of formulation is made. Subsequent oral dosing should not exceed the recommended daily maximum of 40 mg.

Directions for Use of the Prefilled Syringes: Insert the plunger into the syringe barrel and thread it onto the screw. WITHOUT REMOVING THE NEEDLE GUARD, apply quick, firm pressure to the plunger to break the inner seal. (You will feel it let go). Pull back on the plunger slightly to relieve pressure. Remove the needle guard by twisting as you pull. Use the unit as you would a normal syringe. Dispose of properly. Single use only. Discard Unused Portions. Parenteral drug products should be inspected visually for particulate material and discoloration prior to use. Toradol (ketorolac tromethamine) is a Schedule F drug.

Stability and Storage Recommendations:

Toradol Tablets: Store at room temperature with protection from light.

Toradol IM: Store at room temperature with protection from light.

Availability of Dosage Forms: Toradol (ketorolac tromethamine) is available as 10 mg white round film coated tablets containing ketorolac tromethamine, microcrystalline cellulose, lactose and magnesium stearate with one side printed in red with TORADOL inside bold T and other side with Syntex. Toradol (ketorolac tromethamine) 10 mg tablets are available in bottles of 100 and 500 tablets.

Toradol IM is available in 1 mL ampoules (trays of 10) containing 10 or 30 mg/mL.

Toradol IM is also available in 1 mL syringes (1/box) containing 15 or 30 mg/mL.

Product Monograph available on request.

References: **2.** TORADOL Product Monograph, Syntex Inc., Dec. 1992. **3.** Rooks WH II. *Pharmacotherapy* 1990;10(6 Pt 2):305-325. **4.** Yee JP et al. *Pharmacotherapy* 1986; 6(5):253-61. **5.** Brown CR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):455-505. **6.** O'Hara DA et al. *Clin Pharmacol Ther* 1987; 41:556-61. **7.** Fragen RJ. Data on File, Syntex Inc., Document CL3837, 1987. **8.** Cherry C et al. Data on File, Syntex Inc., Document CL3835, 1987. **9.** Stanski DR et al. *Pharmacotherapy* 1990; 10(6 Pt 2):405-445. **10.** Data on File, Syntex Inc., Document #90027-1, 1989. **11.** Stahlgren L. Data on File, Syntex Inc., Document RS-37619, 1991. **12.** Data on File, Syntex, Document #90027-2, 1989. **13.** Forbes JA et al. *Pharmacotherapy* 1990;10(6 Pt 2):775-935. **14.** Forbes JA et al. *Pharmacotherapy* 1990; 10(6 Pt 2):945-1055. **15.** Data on File, Syntex Inc., Document #90027-3, May 1990. **16.** Mehlich D et al. Data on File, Syntex Inc., Document CL3686, 1986. **17.** Oosterlinck W et al. *J Clin Pharmacol* 1990; 30: 336-41. **18.** Cutting CJ et al. Data on File, Syntex Inc., Document CL4740, 1989. **19.** Diebschlag W and Nocker W. Data on File, Syntex Inc., Document CL5468, 1990. **20.** Molinje J et al. Data on File, Syntex Inc., Document CL4624, 1988. **21.** Herrera JMC et al. Data on File, Syntex Inc., Document CL4886, 1989. **22.** American Pain Society. *Principles of Analgesic Use in the Treatment of Acute Pain and Cancer Pain*, 3rd edition, 1992. **23.** Huttman W et al. Data on File, Syntex Inc., Document CL4882, 1989. **24.** Bloomfield S et al. *Pharmacotherapy* 1986;6(5):247-52. **25.** Sunshine A et al. Data on File, Syntex Inc., Document CL3674, 1986. **26.** Vangen O et al. *J Int Med Res* 1988;16:443-51. **27.** Brown J. *Clin Pharmacol Ther* 1993;53:222. **28.** Cataldo PA et al. *Surg Gynecol Obstet* 1993;176:435-8. **29.** Inklaar H et al. Data on File, Syntex Inc., Document CL3549, 1986. **30.** Yee JP et al. Data on File, Syntex Inc., Document CL3849, 1987. **31.** Tommerasen M et al. *Surg Forum* 1992;43:510-2. **32.** Steele R and Durwood EN Jr. *South Med J* 1992;85:35-103. **33.** Forrest JB et al. *J Dev Clin Med* 1992;10(3):129-50. **34.** Stahlgren L et al. *Clin Ther* 1993;15(3):570-80. **35.** Launo C et al. *Minerva Anestesiol* 1991;57:1092-3. **36.** Bosek V et al. *J Clin Anesth* 1992;4:480-3. **37.** Fricke J et al. *Clin Ther* 1993; 15(3): 500-507.

Toradol Information Line: 1-800-561-5841.



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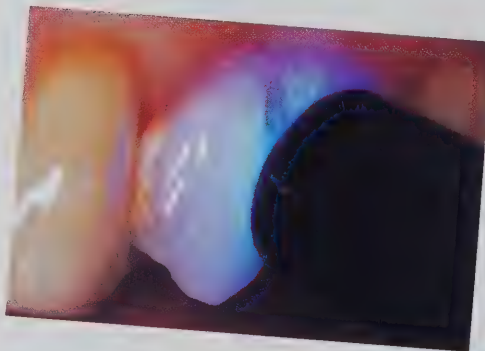
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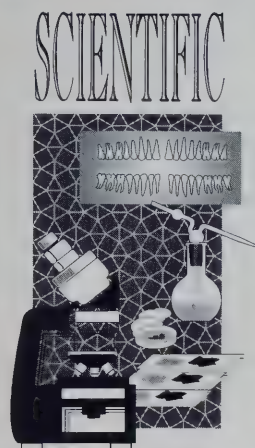


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The Fourth Canal: Its Incidence In Maxillary First Molars

Brian M. Henry, B.Sc., DMD, MS, MRCD(C)

Vancouver

ABSTRACT

The purpose of this study was to determine the frequency with which a fourth canal is clinically located, instrumented and obturated in maxillary first molars. The results indicate that it can be located, instrumented and filled at least 77 per cent of the time. This is an important finding for the general practitioner and endodontist alike, as clinical success is directly related to the complete debridement and obturation of the root canal system.

SOMMAIRE

Cette étude avait pour but de déterminer la fréquence avec laquelle on repère, nettoie et obture un quatrième canal dans les premières molaires du maxillaire. Les résultats ont démontré que cette opération peut se faire dans 77 p. cent des cas. Pour le praticien général comme pour l'endodontiste, il s'agit d'une importante découverte, vu que la réussite clinique dépend directement du débridement complet et de l'obturation des canaux radiculaires.

Introduction

It is a well accepted fact that debriding and obturating the root canal system is an important factor in determining the success or failure of a particular case. To this end, many studies have

been carried out by endodontic researchers to determine the number and configuration of the canals in each particular tooth.

Various *in vitro* methods have been employed in attempting to identify the elusive fourth canal in maxillary first molars. These include: sectioning of the root,¹⁻³ injection of root canal systems with ink or dye,^{4,5} and radiographic evaluation.^{3,6,7} A wide range of results is found in the literature. These results vary considerably depending on the researcher and the method employed. Weine et al¹ sectioned roots and determined that 51.5 per cent of maxillary first molars had four canals. Pineda and Kuttler⁶ used radiographs and determined the incidence of fourth canals to be 60.7 per cent. Slowey³ also used radiographs, but only located a fourth canal in 50.4 per cent of cases. Green⁸ sectioned 1,300 teeth and concluded that 36 per cent of maxillary molars have four canals. Vertucci⁴ decalcified 100 first molars and discovered that 55 per cent had four canals. Siedberg et al² in 1973 and Pomeranz and Fishelberg⁵ in 1974 conducted comparative studies that contrasted *in vitro* and *in vivo* data. Their findings were remarkably similar. *In vitro*, the frequency of a fourth canal was reported to be 62 and 69 per cent, respectively. *In vivo*, the frequency dropped to 33.3 and 31 per cent, respectively.

The clinical difficulty in locating the fourth canal often results in it not being found. This becomes

clear to the practitioner who observes an apparently well-treated maxillary first molar, yet finds that the patient is still experiencing discomfort or has developed a periapical radiolucency about the mesial root tip.

Methods

The primary criterion set forth for this *in vivo* study was that the tooth examined had to be a maxillary first molar. If there was any possibility that a tooth might be a second molar that had tipped or migrated forward into the location of a first molar, this tooth was not included in the study.

A total of 163 teeth were treated by the author. Access was performed according to criteria set forth by Ingle⁹ and modified as required. In cases where the second mesial canal (mesial lingual or ML) was not immediately apparent, the mesial wall/floor junction was enlarged mesially or a trough was cut in the floor along a line running roughly from the mesial buccal orifice to the palatal orifice. This was accomplished using a Number 4, round surgical-length slow-speed bur. A standard DG-16 endodontic explorer was used to locate and identify the orifices. Once located, a Number 8 (or Number 6) K-file was used to negotiate the ML canal. Based on whether there was a separate fourth orifice (ML) present and instrumentable, the teeth were grouped as having three canals (mesial, distal and palatal) or four



canals (mesial, mesial lingual, distal and palatal).

Results

During the six-month period of this study, a total of 163 maxillary molars were treated. Of these, 127 (77.9 per cent) had a fourth canal that was clinically present and instrumentable. Only 36 teeth (22.1 per cent) had three canals, and four of these teeth had a definite fourth orifice in the correct location that was too calcified to negotiate.

Discussion

Locating the elusive fourth canal may be easier than many clinicians believe, but it requires the simple armamentarium discussed in methods. The explorer must be sharp and not bent at the tip. To have any chance of locating the fourth canal, a sound knowledge of pulpal anatomy and a proper access preparation are critical. The fourth canal is usually located about one-third of the way from the mesial buccal orifice, along an imaginary line to the palatal orifice (**Fig. 1**).

Often, the canal is tight up against the mesial wall, and this may require judicious removal of some mesial chamber wall to locate the canal or gain access to it. However, the orifice has also been located adjacent to both the distal and palatal orifices or even in the dead centre of the chamber floor. Frequently, the location of the fourth canal is only determined at the end of the first appointment, or just prior to obturating if a one-appointment procedure is planned. This is the time when visibility is at its best — the tooth is clean and dry, and no blood, tissue, etc. are present.

Radiographs can be a valuable asset in determining if a fourth canal is present, however, they are no substitute for a thorough clinical search. A distally-angled radiograph will often show two mesial roots or a single file eccentrically placed in the mesial buccal canal. If a file is off-centre in a root, the clinician should suspect the presence of a second canal in that root.

The numbers in this study indicate a pattern of almost 62 per cent

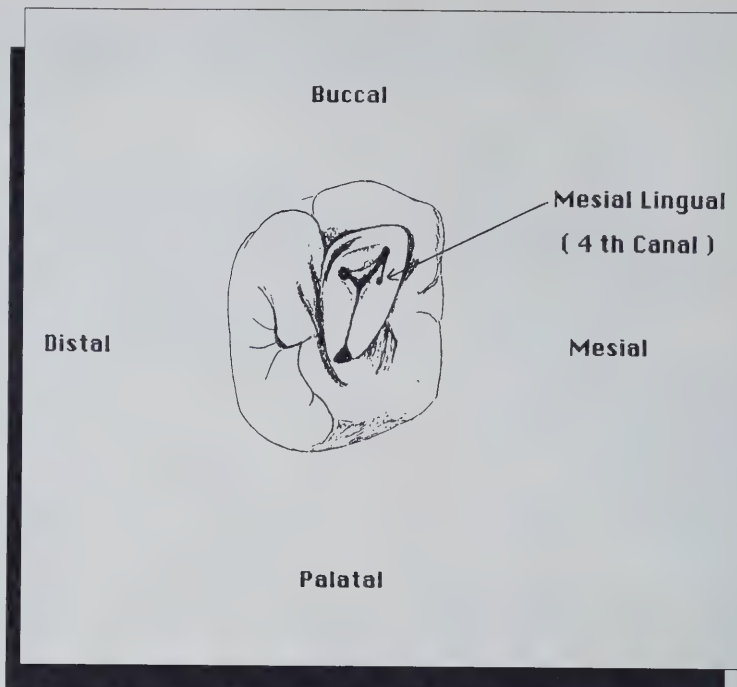


Fig. 1: Diagrammatic representation of a maxillary first molar showing an access preparation and the typical location of all four canals.

more first molars being treated on the left side of the arch than on the right, possibly indicating a referral preference related to perceived access difficulties in the left arch.

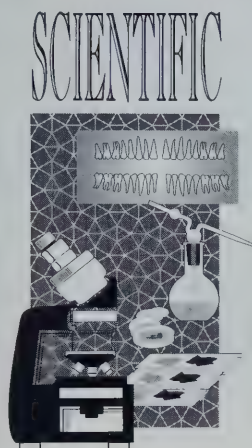
Endodontics has long had bad press — pain tends to create bad feelings between dentist and patient alike. If we, as dental practitioners, are to achieve greater success in endodontics, it is obvious that we must search out and treat far more fourth canals than have ever been treated before. We must consider that a fourth canal occurs much more frequently than previously believed. The fact that 77.9 per cent of maxillary first molars have identifiable and instrumentable fourth canals should convince us that the fourth canal, far from being the exception, is the rule. ■

Dr. B.M. Henry is a certified specialist in endodontics and is currently in a group endodontic practice in Vancouver. He also teaches clinical endodontics at the University of British Columbia and mentors an endodontic study club.

Reprint requests to: **Dr. B.M. Henry**, 2525 Willow St., Suite 607, Vancouver, B.C. V5Z 3N8

References

1. Weine, F.S., Healey, H.J., Gerstein, H. et al. Canal configuration in the mesiobuccal root of the maxillary first molar and its endodontic significance. *Oral Surg*:419-425, 1969.
2. Seidberg, B.H., Altman, M., Guttuso, J., et al. Frequency of two mesiobuccal root canals in maxillary permanent first molars. *JADA* 87:852-856, 1973.
3. Slowey, R.R. Radiographic aids in the detection of extra root canals. *Oral Surg* 37:762-771, 1974.
4. Vertucci, F.J. The endodontic significance of the mesiobuccal root of the maxillary first molar. *U.S. Navy Med* 63:29-31, 1974.
5. Pomeranz, H.H. and Fishelberg, G. The second mesiobuccal canal of maxillary molars. *JADA* 88:119-124, 1974.
6. Pineda, F. and Kuttler, Y. Mesiodistal and buccolingual roentgenographic investigation of 7,275 root canals. *Oral Surg* 33:101-110, 1972.
7. Pineda, F. Roentgenographic investigation of the mesiobuccal root of the maxillary first molar. *Oral Surg* 36:253-260, 1973.
8. Green, D. Double canals in single roots. *Oral Surg* 35:689-696, 1973.
9. Ingle, J. *Endodontics*. Philadelphia, Lea & Febiger, 1965.



Quantification Of the Lamina Dura

J.S. Hubar, B.Sc., DMD, MS

New Orleans, LA

ABSTRACT

The lamina dura continues to be an enigma. It is typically described in the scientific literature as being present or absent. This study used digitized radiographs in an attempt to quantify the thickness of the lamina dura in different regions of the oral cavity in healthy adult patients. Even with the potential for multiple variables that could affect the appearance of the lamina dura, the results show measurable differences in the thickness of the lamina dura in the anterior and posterior teeth, with average widths ranging from 0.22 - 0.54 mm.

SOMMAIRE

La lamina dura continue de faire énigme. Dans les écrits scientifiques, on la dit ordinairement présente ou absente. Dans cette étude, on a eu recours à des radiographies numérisées dans un effort pour quantifier l'épaisseur de la lamina dura dans différentes parties de la cavité buccale de patients adultes en bonne santé. Même avec la possibilité de multiples variables pouvant modifier l'apparence de la lamina dura, les résultats ont révélé des différences mesurables dans son épaisseur dans les dents antérieures et postérieures, la moyenne variant de 0,22 à 0,54 mm.

The lamina dura has been and continues to be an enigma. In order to understand why this is so, one simply has to read the scientific literature.

In 1966, Dr. Lawrence Paris¹ stated that the dental lamina dura was neither a discrete organ nor a specialized tissue. On a dental X-ray film, this cortical-like thickening appears as a radiopaque line. The density of this line can vary in diseases that involve the withdrawal of calcium from the bone, e.g. hyperparathyroidism. Current descriptive terms infer that the lamina dura interpretation is a positive and qualitative, a "yes" and "no," black and white, present and not present, diagnostic sign. Actually, this interpretation is a qualitative sliding-scale type of reading that is always more difficult to evaluate than the former interpretation and can never be measured exactly.¹ Dr. Harrison Berry, Jr.,² in 1973, described the lamina dura as a cribiform plate that lines the sockets of teeth, and responds to the everyday forces transmitted through the teeth to the bone, thus undergoing hyper- and hypocalcification. In 1978, Kilpinen and Hakala³ stated that the lamina dura was made up of bundle bone due to Sharpey's perforating fibres, and that the lamina dura was not an optical artifact. Its visibility is due to the direction of the X-rays, the shape of the alveolus and the higher mineral content of the al-

veolar wall as compared to the rest of the alveolar bone. Goaz and White,⁴ in 1987, described the lamina dura as being an extension of the lining of the bony crypt that surrounds each tooth during development and said that its appearance is dependent on the angulation of the X-ray beam.

It is obvious from the scientific literature that the appearance of the lamina dura is variable and, to date, that it has only been described qualitatively. However, its appearance is recognized as being a useful diagnostic radiographic feature. An intact lamina dura that surrounds the apical region of a tooth typically indicates a vital pulp, while its absence in this region is often associated with a non-vital tooth (e.g. periapical granuloma, cyst or abscess), which subsequently assists in diagnosing endodontic problems.

The purpose of this study is to determine whether present day technology is sophisticated enough to quantify the lamina dura, realizing that many variables such as imaging geometry may alter the radiographic appearance of the lamina dura observed on any given film. The ability to quantitate the thickness of the lamina dura may assist, for example, in detecting bone changes that may occur within individuals due to general host factors that can then be documented over time.



Fig. 1: Video digitizing workstation.

Methods

A total of 150 periapical films were acquired from the archives of the University of Pittsburgh, School of Dental Medicine's patient records. The central incisors, the first premolars and the first molars of both the maxilla and the mandible were selected to measure the thickness of the lamina dura. All of the radiographs were of the Kodak ULtraspeed film type, and all had been taken with RINN XCP Paralleling instruments (Elgin, Ill.). To minimize some of the potential effects from pathology or age-related factors (e.g. hyperparathyroidism/osteoporosis) on the radiographic appearance of the lamina dura, each radiograph selected had to meet the following criteria: a) the crestal bone height was within 1-2 mm of the cemento-enamel junction; b) the age of the patient was between 18-45; c) the patient's medical records did not reveal a history of any systemic disease. Additionally, each film had to be of good diagnostic quality.

A video digitizing work station was used to digitize each of the radiographs. The system consisted of an IBM AT computer, an RGB monitor (resolution of 512 x 512 lines x 8 bits information/dot and 256 grey value), Image Pro software and an Imaging Technologies Frame Grabber (Media Cybernetics, Silver Spring, Md.) used in conjunction with an RS170 video camera (Figs. 1 and 2). To correct for

differential magnification of each radiograph, the Image Pro software was re-calibrated for each film by the principal investigator (PI). This was accomplished by superimposing a measuring grid composed of 1.0 mm x 1.0 mm squares over each radiograph and re-calibrating the scale of measurement with the cursor for each radiograph studied (Fig. 3). Subsequent to calibration, each radiograph was digitized. Using the moving cursor on the computer monitor, measurements of the lamina dura were taken by the PI at the visibly sharpest portions of the crestal, mid-root and apical regions of the mesial and distal root of each tooth. (Note: in cases where multiple roots were present, the mesially positioned root was selected.) Measurement points were selected along the inner and outermost margins of the lamina dura at each particular site. The software program then converted the width of the lamina dura at each of these points into millimetres. Descriptive statistics were then calculated using the Statistical Analysis Program.⁵ This included the mean, the variance, the standard deviation, and the standard error for each measurement.

Results

The crestal to apical lamina dura mandibular molar mean measurements ranged from 0.35 to 0.54 mm, the mandibular bicuspid mean measurements ranged from

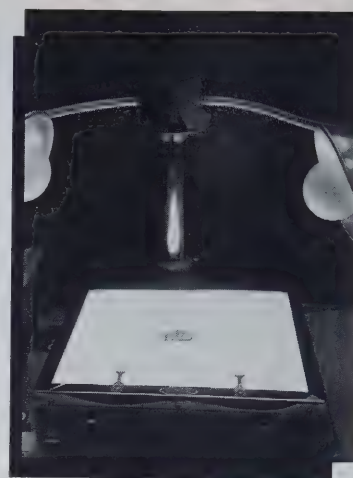


Fig. 2: Lightbox with radiograph and video camera.

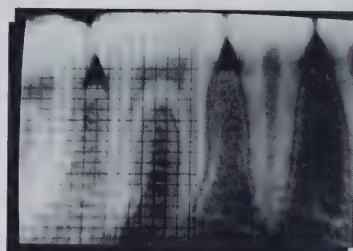


Fig. 3: Monitor image of radiograph with 1.0 mm x 1.0 mm grid superimposed.

0.30 to 0.48 mm, and the mandibular incisors mean measurements ranged from 0.26 to 0.34 mm. Similarly, the mean maxillary molar crestal to apical measurements ranged from 0.26 to 0.45 mm, the maxillary bicuspid mean measurements ranged from 0.28 to 0.43 mm, and the maxillary incisors ranged from 0.22 to 0.29 mm in width (Table I).

Discussion

The purpose of this study was to see if the quantification of the lamina dura is now feasible and practical using present day technology. In fact, the digitization of radiographic images, as performed in this study, allowed the PI to make fine measurements. The process is still limited by the resolution of the monitor, the resolution of the human eye to perceive different points as separate entities, and the quality of the input information (i.e. radiographic image). Note that the radiographic image itself is affected

TABLE I

	Label		N	Mean	Variance	Std Dev	Std Error	Minimum	Maximum
Mandibular Molar	Crestal	Mesial	24	0.54	0.01	0.12	0.02	0.39	0.83
		Distal	12	0.39	0.01	0.08	0.02	0.27	0.53
	Mid-Root	Mesial	29	0.39	0.01	0.08	0.01	0.22	0.54
		Distal	14	0.36	0.01	0.08	0.02	0.22	0.54
	Apex		26	0.35	0.01	0.09	0.01	0.22	0.58
Mandibular Bicuspid	Crestal	Mesial	21	0.48	0.01	0.13	0.02	0.27	0.70
		Distal	16	0.43	0.01	0.13	0.03	0.27	0.72
	Mid-Root	Mesial	25	0.39	0.01	0.09	0.01	0.25	0.61
		Distal	18	0.30	0.01	0.06	0.01	0.22	0.44
	Apex		20	0.33	0.01	0.09	0.02	0.21	0.58
Mandibular Incisor	Crestal	Mesial	26	0.34	0.01	0.06	0.01	0.21	0.52
		Distal	16	0.34	0.01	0.07	0.01	0.21	0.47
	Mid-Root	Mesial	29	0.27	0.01	0.04	0.01	0.19	0.37
		Distal	17	0.29	0.01	0.05	0.01	0.21	0.42
	Apex		20	0.26	0.01	0.05	0.01	0.17	0.37
Maxillary Molar	Crestal	Mesial	17	0.45	0.02	0.15	0.03	0.27	0.89
		Distal	2	0.32	0.02	0.16	0.11	0.21	0.44
	Mid-Root	Mesial	16	0.38	0.01	0.11	0.02	0.22	0.63
		Distal	3	0.26	0.01	0.05	0.03	0.21	0.32
	Apex		9	0.34	0.01	0.10	0.03	0.20	0.52
Maxillary Bicuspid	Crestal	Mesial	10	0.43	0.01	0.11	0.03	0.23	0.63
		Distal	9	0.33	0.01	0.08	0.02	0.26	0.52
	Mid-Root	Mesial	16	0.36	0.01	0.08	0.02	0.26	0.52
		Distal	14	0.31	0.01	0.04	0.01	0.25	0.37
	Apex		16	0.28	0.01	0.06	0.01	0.16	0.42
Maxillary Incisor	Crestal	Mesial	20	0.29	0.01	0.05	0.01	0.19	0.39
		Distal	9	0.27	0.01	0.04	0.01	0.23	0.38
	Mid-Root	Mesial	24	0.27	0.01	0.04	0.01	0.20	0.41
		Distal	12	0.26	0.01	0.04	0.01	0.20	0.38
	Apex		11	0.22	0.01	0.02	0.01	0.18	0.27

by the inherent properties of the recording film, which has its own sharpness and resolution characteristics. This could be overcome by the direct digitization of the image, eliminating the film medium

entirely. However, the necessary equipment was not available for this study.

The use of RINN XCP paralleling instruments assisted in standardizing the radiographic tech-

nique used to expose the films, although film positioning errors are still possible. Other basic fundamental factors including root geometry; unknown physiologic forces applied to teeth, be they



natural or other, such as orthodontic forces; and projection geometry can also alter the appearance of the lamina dura. Interestingly, even though all of these potential variables could have affected the appearance of the lamina dura, this study found only a small range of values in each location measured.

Conclusion

The results of this study indicate that the digitization of radiographic images permits varying thicknesses of the lamina dura to be measured, with small differences being noted between the teeth in the posterior and anterior regions of the mouth. Even with numerous potential variables that could affect the appearance of the lamina dura, the overall mean thicknesses ranged from 0.22 - 0.54 mm, with standard devia-

tions of 0.02 - 0.12 mm in young (18-45 year old) healthy individuals.

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Dr. Hubar is an assistant professor in the department of oral diagnosis, oral medicine, and radiology, School of Dentistry, Louisiana State University.

Reprint requests to **Dr. Hubar:** Department of Oral Diagnosis, Oral Medicine, and Radiology, School of Dentistry, Louisiana State University, Medical Center, 1100 Florida Ave., New Orleans, LA 70119-2799.

References

1. Paris, L. A change in dental lamina dura terms for the clinician. *J Maine Med Assoc* 57:134, 1966.
2. Berry, Jr., H.M. The lore and the lure O' the lamina dura. *Diag Radiol* 109:525-528, 1973.
3. Kilpinen, E. and Hakala, P.E. Reproduction of the lamina dura in dental radiographs. *Dentomax Radiol* 7:51-54, 1978.
4. Goaz, P.W. and White, S.C. *Oral Radiology: Principles and Interpretation*. 2nd ed., St Louis, C.V. Mosby, 1987.
5. Ray, A. *Statistical Analysis System Users Guide: Basics*. Cary, N.C., Statistical Analysis System Institute, Inc., 1982.

AIDS.....Continued from p.991

transmission will not occur is to prohibit all HIV-positive dental personnel from clinical practice, i.e. remove the source of the infection. However, for justifiable ethical, practical, and economic reasons, there is no authoritative support for the routine testing of all health care workers, including dental personnel.

Without their genetic analysis, CDC would have had difficulty developing a plausible defence for their claim that Dr. Acer infected five patients. As recent studies demonstrate, genetic analysis of the highly variable HIV DNA is a developing science fraught with an absence of established standards and acceptable criteria. The opinions of Root-Bernstein and particularly those of Duesberg question the infectious nature of AIDS, and to what extent — if any — HIV acts to create the immune deficiency that is a critical aspect of the syndrome.

No doubt the Florida case will be featured in definitive historical accounts of AIDS. Currently, however, it provides no support for altering the traditional methods of practising infection control in the dental office.

Dr. J. Hardie is head of the department of dentistry at Vancouver General Hospital.

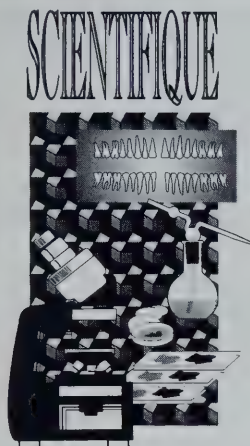
Reprint requests to: Dr. J. Hardie, Head, Department of Dentistry, Vancouver General Hospital, 805 West 12th Ave., Vancouver, B.C. V5Z 1M9

References

1. CDC. Possible Transmission of Human Immunodeficiency Virus to a Patient During an Invasive Dental Procedure. *MMWR* 39:489-493, 1990.
2. United States General Accounting Office. *AIDS: CDC's Investigation of HIV Transmission by a Dentist*. Sept. 1992.
3. CDC Update: Transmission of HIV infection during invasive dental procedures — Florida. *MMWR* 40:377-381, 1991.
4. Ou, C-Y, Ciesielski, C.A., Myers, G. et al. Molecular Epidemiology of HIV

Transmission in a Dental Practice. *Science* 256:1165-1171, 1992.

5. Gooch, B., Marianos, D., Ciesielski, C. et al. Lack of Evidence for Patient-to-Patient Transmission of HIV in a Dental Practice. *JADA* 124:38-44, 1993.
6. Molinari, J. Thoughts on a timely report. *JADA* 124:39, 1993.
7. Smith, T.F. and Waterman, M.S. The Continuing Case of the Florida Dentist. *Science* 256:1155-1156, 1992.
8. De Bry, R.W., Wells, S.H., Hill, M.D. et al. Dental HIV transmission? *Nature* 361:691, 1993.
9. CDC, Update: Investigation of Patients Who Have Been Treated by HIV-Infected Health Care Workers. *MMWR* 41:344-346, 1992.
10. Duesberg, P.H. AIDS Acquired by Drug Consumption and other Noncontagious Risk Factors. *Pharmac Ther* 55:201-277, 1992.
11. Root-Bernstein, R.S. Rethinking AIDS. The Tragic Cost of Premature Consensus. *The Free Press*, New York, 1993.
12. Sternberg, S. Medical Sleuths lack legal weapons in AIDS mystery. *Vancouver Sun*, Sept. 7, 1991.
13. Simmonds, P., Balfe, P., Peutherer, J.F. et al. Human immunodeficiency virus-infected individuals contain provirus in small numbers of peripheral mononuclear cells and at low copy numbers. *J Virol* 64:864-872, 1990.



Alimentation des étudiants de médecine dentaire à leur entrée à l'université

Monique G. Julien, dt.p., M.Sc., MPH, Dr.P.H.

Montréal

SOMMAIRE

Comme il existe peu de données sur l'alimentation de jeunes adultes, il nous est apparu intéressant d'étudier l'alimentation des étudiants de médecine dentaire à leur entrée à l'université et de voir si elle diffère selon le sexe. Des relevés alimentaires de trois jours ont été complétés par les étudiants de 1986 à 1992 et sont analysés en fonction de l'apport énergétique et de sa distribution en protéines, glucides et lipides. Les apports de calcium et de fer ont été calculés, de même que l'indice de masse corporelle (P/T^2) et comparés aux recommandations et moyennes canadiennes. Pour les deux sexes, l'apport énergétique moyen est légèrement inférieur aux apports recommandés. La proportion de l'énergie en provenance des glucides, des lipides et des protéines est sensiblement la même pour les garçons comme pour les filles. L'apport glucidique est inférieur à l'apport canadien recommandé. L'ingestion de lipides est à peine supérieure aux recommandations nationales tandis que celle des protéines, du calcium et du fer les excèdent. La zone inférieure de l'indice de masse corporelle (< 20) compte une proportion de sujets semblable à celle des études Promotion Santé Canada et Santé Québec. Cependant, beaucoup moins de sujets se retrouvent dans la zone supérieure à 25. Comme

une proportion significative d'étudiantes d'origine asiatique appartient au groupe d'indice de masse corporelle faible, l'hypothèse que cet indice ne soit pas valide pour cette population est soulevée.

ABSTRACT

As there are not a lot of data available on the diet of the young adult population, we perceived that it would be interesting to study the diet of dental students entering university, and to determine if their diet differs according to sex. From 1986 to 1992, participating students completed three-day lists of the foods they consumed. These lists were reviewed according to the energy content and the distribution of proteins, glucides and lipids in the diet. The calcium and iron content were calculated, as was the body weight index (P/T^2), and then compared to the Canadian recommendations and averages. For both males and females, the average energy content was slightly lower than recommended. The proportion of energy derived from glucides, lipids and proteins was more or less the same for both groups, but the glucide content was lower than recommended. The ingestion of lipids was just above the national recommendation, while the ingestion of proteins, calcium and iron was higher. A similar proportion of individuals to the one identified in studies by Health Promotion Canada and

Santé Québec was found to be in the lower range of the body weight index (< 20). Many fewer, however, were in the 25+ section. As a significant number of female students from Asia were in the low body weight index group, it was assumed that this index might not be valid for this population.

Introduction

Les jeunes adultes sont reconnus comme formant un groupe homogène d'individus en bonne santé. Ceci explique, peut-être, pourquoi il existe relativement peu de données sur l'alimentation de ce groupe d'âge. Il nous est apparu intéressant d'étudier l'alimentation de nos étudiants à leur entrée à l'université et de comparer les données obtenues en fonction du sexe et des recommandations alimentaires canadiennes quant aux apports énergétiques et à la contribution des principaux nutriments : glucides, lipides et protéines. Comme il s'agit d'un groupe d'âge préoccupé de l'apparence physique, des données sur le poids et la taille ont été recueillies et sont comparées à des mesures équivalentes rapportées par de grandes études faites en particulier au Canada¹ et au Québec.² Enfin, des données sur les apports en calcium et en fer, de même que sur le potentiel cariogénique de l'ali-

mentation ont également été relevées.

Méthodologie

À chaque année, avant d'aborder le cours de nutrition et d'apprentissage au counseling diététique, les étudiants de première année de la Faculté de médecine dentaire de l'Université de Montréal complètent un relevé détaillé de leur alimentation pour une période de trois jours, incluant un jour de fin de semaine. Pendant le cours d'apprentissage au counseling diététique, ils échangent leur relevé avec un collègue et, guidés par le professeur, en font l'analyse en fonction d'un certain nombre de paramètres. Les données alimentaires utilisées dans la présente recherche sont issues des relevés faits par les étudiants des années 1986 à 1992 avec une exception pour l'année 1987 où de telles activités ont été suspendues. Les multiples groupes d'étudiants forment un seul échantillon qui comprend 518 sujets soit 226 (43,6 p. cent) garçons et 292 (56,4 p. cent) filles pour l'analyse des données sur l'énergie, les principaux nutriments et le calcium. Les données sur l'apport en fer n'ayant été recueillies qu'en 1992, l'échantillon se trouve réduit à 83 sujets soit 31 (37,4 p. cent) garçons et 52 (62,4 p. cent) filles. Quant aux données sur le poids, la taille et l'indice de masse corporelle, elles ont été complétées pour 337 sujets dont 152 (45,1 p. cent) sont de sexe masculin et 185 (54,9 p. cent) sont de sexe féminin. La moyenne d'âge est de 21,8 ans ($s = 3,4$) pour les garçons et de 22,4 ans ($s = 4,1$) pour les filles.

L'estimation des apports nutritionnels a été faite en utilisant deux tables de composition d'aliments. Les aliments non retrouvés dans la table canadienne³ ont été analysés avec une table américaine plus complète.⁴

L'évaluation du potentiel cariogénique de l'alimentation a été faite à partir d'une méthode nouvelle développée par l'auteur⁵ et dont les résultats d'une première validation faite auprès d'adolescents australiens ont été soumis pour publication au *Journal de l'Association dentaire canadienne*.⁶ Dans cette méthode, les

TABEAU I

Pourcentage moyen de l'énergie en provenance des glucides, des lipides et des protéines, selon le sexe

	n	Glucides	s	Lipides	s	Protéines	s
Garçons	226	50,0	(7,8)	31,80	(7,7)	18,0	(3,9)
Filles	292	51,0	(6,8)	30,70	(7,0)	18,0	(4,2)
t		-1,60		1,67		-0,01	
p		0,11		0,09		0,99	

TABEAU II

Énergie (kilocalories) consommée selon le sexe

	n	$\bar{x}$	s
Garçons	226	2 474,0	653,8
Filles	292	1 750,0	481,9
t	14,4		
p	0,0001		

TABEAU III

Consommation de calcium et de fer selon le sexe.

	Calcium (mg)			Fer (mg)		
	n	$\bar{x}$	s	n	$\bar{x}$	s
Garçons	221	1 247,5	493,1	31	7,6	4,2
Filles	295	974,7	387,0	52	4,3	6,1
t		7,0			2,6	
p		< 0,0001			0,01	

aliments sont d'abord regroupés en quatre catégories selon plusieurs facteurs susceptibles d'influencer leur potentiel cariogénique : leur teneur en mono et en disaccharides, leur concentration, leur composition et leur consistance. Un score est formé pour chaque moment de consommation au cours de la journée. Ces sous-scores sont additionnés pour établir un score total quotidien qui tient compte de la fréquence et de la nature des aliments consommés. Comme l'utilisation de cette méthode d'analyse n'a été faite qu'à compter de 1988, le nombre de sujets pour l'étude de ce paramètre se limite à 435 soit 185 (42,5 p. cent) garçons et 250 (57,5 p. cent) filles.

Un niveau critique observé inférieur à 5 p. cent, $p < 0,05$, est considéré statistiquement signifi-

catif. Essentiellement, on a utilisé des tests de khi-2 de Pearson pour tester l'égalité de proportions et des tests t de Student pour comparer des moyennes. Lorsque plusieurs variables sont intervenues et qu'il fallait en contrôler les effets, comme ce fut le cas avec l'énergie, le calcium et l'indice de la masse corporelle, on a procédé à des analyses de covariance.

Résultats

Il n'existe aucune différence significative entre les sexes quant au pourcentage moyen de l'énergie provenant soit des glucides, soit des lipides ou des protéines (tableau I).

On retrouve toutefois une différence significative entre les sexes quant à l'apport énergétique total. Les filles consomment en moyenne

TABLEAU IV**Scores de potentiel cariogénique selon le sexe**

	n	$\bar{x}$	s
Garçons	185	20,6	8,3
Filles	250	17,3	7,0
t		4,49	
p		< 0,0001	

TABLEAU V**Distribution de l'IMC selon les sexes**

	Zones de l'IMC					
	< 20		20 - 25		> 25	
	n	%	n	%	n	%
Garçons	13	8,5	119	78,3	20	13,2
Filles	65	35,1	111	60	09	4,9
khi-2	= 36,23					
p	= 0,01					

TABLEAU VI**Distribution de l'IMC chez les filles selon l'origine ethnique**

	Asiatique		Canadienne-française	
	n	%	n	%
< 20	15	65,2	44	33,1
20 - 25	8	34,8	82	61,6
> 25	0	0	07	5,3
	23		133	
khi-2	= 9,0			
p	= 0,01			

TABLEAU VII**Apport en calcium chez les filles selon l'origine ethnique**

	Asiatique		Canadienne-française	
	n	%	n	%
< 700 mg	11	47,8	21	15,9
> 700 mg	12	52,2	112	84,1
	23		133	
khi-2	= 12,179			
p	= < 0,0001			

moins d'énergie que les garçons (**tableau II**).

On observe également que les garçons consomment en moyenne

davantage de calcium et de fer que les filles (**tableau III**).

Lorsqu'on examine les résultats de l'indice de potentiel cariogénique de l'alimentation, on observe

que les garçons ont un score moyen plus élevé que les filles (**tableau IV**).

À l'aide d'une analyse de covariance, nous avons observé qu'il n'existait plus de différence d'indice de potentiel cariogénique moyen entre les sexes après avoir contrôlé l'apport énergétique. Les moyennes ajustées deviennent 19,0 pour les filles et 18,0 pour les garçons ($F = 1,55$; $p = 0,21$). Cependant, une analyse similaire faite en tenant compte de l'apport glucidique confirme l'effet significatif de la variable sexe, les moyennes de scores ajustées devenant 19,2 pour les filles et 17,7 pour les garçons ($F = 4,63$; $p = 0,03$). Les filles semblent avoir la dent plus sucrée que les garçons.

Le poids moyen observé des garçons est de 70,6 kg ($n = 152$; $s = 8,6$) et celui des filles de 55,7 kg ($n = 186$; $s = 7,5$). Les tailles moyennes des garçons sont de 1,76 m ($n = 153$; $s = 0,06$) et de 1,63 m ($n = 188$; $s = 0,07$) pour les filles. Il nous semble plus intéressant de comparer l'indice de masse corporelle (IMC) ou le rapport poids sur taille au carré (P/T^2) de chacun des groupes. Les valeurs moyennes observées, bien que se situant dans la zone souhaitable de 20 à 25, sont significativement supérieures pour les garçons soit 22,8 ($n = 152$; $s = 2,4$) en regard de 20,9 ($n = 185$; $s = 2,5$) pour les filles ($t = 6,92$ $p < 0,0001$). Les filles semblent se tenir dans les valeurs les plus faibles de la zone souhaitable alors que les garçons gravitent au centre de cette même zone. Le regroupement des valeurs de l'indice de masse corporelle en catégories conventionnelles < 20, 20-25 et > 25 et selon les sexes (**tableau V**) confirme cette différence significative entre les garçons et les filles.

Nous avons voulu comparer les valeurs de l'indice de masse corporelle avec les apports de calcium des sujets, tant en catégories, suivant qu'elles se situaient en-dessous ou au-dessus des valeurs recommandées (khi-2) qu'en valeurs continues (t de Student). Aucune de ces comparaisons ne s'est avérée significative. À l'examen des données brutes cependant, nous avons observé que plusieurs sujets avaient une valeur faible de l'IMC et



d'apport en calcium. Il s'agissait surtout de filles d'origine asiatique. Nous avons donc exploré plus à fond ces variables pour constater qu'en effet, davantage de filles d'origine asiatique se retrouvent dans les zones inférieures de l'IMC alors que plus de filles d'origine canadienne-française ont un apport de calcium supérieur à l'apport recommandé au Canada : soit une valeur supérieure à 700 mg (**tableaux VI et VII**). Cependant, il n'y a pas de différence d'apport énergétique selon l'origine ethnique chez les filles ($khi-2 = 3,3$; $p = 0,07$).

Discussion

Une étude, faite aux États-Unis auprès d'étudiants de médecine⁷ rapporte des pourcentages moyens d'énergie provenant des lipides, des protéines et des glucides de l'ordre de 36, 17 et 47 p. cent respectivement, pour un groupe de 20 garçons et 2 filles et un apport énergétique moyen de 1 949 Kcal/jour. Les moyennes de ces variables calculées chez nos étudiants des deux sexes sont 31,2 ($s = 7,3$) à partir des lipides, 18 ($s = 4,1$) à partir des protéines et 50,5 ($s = 7,3$) à partir des glucides. Elles apparaissent davantage réaliste compte tenu de la taille de notre échantillon : 226 garçons, 292 filles. L'apport lipidique moyen dépasse à peine la recommandation canadienne⁸ qui est de 30 p. cent de l'énergie. On observe cependant que davantage de filles 46,3 p. cent vs 39,2 p. cent de garçons, ont des consommations lipidiques inférieures à 30 p. cent. L'apport protidique moyen, pour sa part, excède la recommandation canadienne qui est de 13 à 15 p. cent de l'énergie. L'excès de trois à cinq p. cent constaté est cependant considérable lorsqu'on réalise qu'il reflète une ingestion moyenne de 111 g/jour au lieu de 61 g/jour pour les garçons et une de 79 g/jour au lieu de 50 g/jour pour les filles. Quant à l'apport glucidique moyen observé de 50,5 p. cent de l'énergie, il s'avère un peu faible par rapport à la recommandation de 50 à 60 p. cent de l'énergie. Il aurait avantage à être augmenté aux dépens des protéines.

Les apports énergétiques moyens des étudiants, soit 10 389 kJ (2 474 Kcal) pour les garçons et 7 350 kJ (1 750 Kcal) pour les filles, sont inférieurs à ceux proposés par le Gouvernement canadien pour les jeunes adultes de 19 à 24 ans lesquels se situent à 3 000 Kcal pour les garçons et 2 100 pour les filles. Une étude faite en Angleterre⁹ avec un échantillon de 144 garçons et de 158 filles âgés de 22 à 25 ans rapporte des apports énergétiques moyens semblables à ceux que nous avons observé. Ils sont de 2 470 Kcal pour les garçons et de 1 830 Kcal pour les filles. Les pourcentages moyens d'énergie sont cependant fort différents : environ 45 p. cent d'apport lipidique, 14 p. cent d'apport protidique et 39 p. cent d'apport glucidique. Les apports énergétiques relativement faibles observés chez nos étudiants peuvent s'expliquer par une préoccupation notable des problèmes liés à une consommation excessive de matières grasses y compris le gain de poids. Par exemple, aucun étudiant de notre échantillon ne consomme de lait ayant une teneur en gras supérieure à 2 p. cent. Aussi, la plupart des yogourts consommés sont à faible teneur en gras.

Les apports moyens en calcium excèdent les valeurs recommandées pour chacun des groupes : dans 80 p. cent des cas chez les garçons et dans 72 p. cent des cas chez les filles. La consommation de produits laitiers sous forme de lait, de yogourt et de fromages est élevée dans ce groupe d'étudiants. Il n'est pas rare d'y rencontrer un garçon qui consomme au moins un litre de lait par jour à part les yogourts et le fromage. Les filles boivent moins de lait en général mais consomment des yogourts et des fromages. Tel que déjà mentionné, ce sont des filles d'origine asiatique qu'on remarque surtout au bas de l'échelle de consommation du calcium. L'étude anglaise⁹ citée plus haut rapportait également des valeurs de calcium supérieures à nos apports recommandés bien que légèrement inférieurs à ceux de notre étude, soit 1 125 mg chez les garçons et 880 mg chez les filles.

L'apport moyen en fer retrouvé chez nos étudiants dépasse largement la recommandation cana-

dienne qui est de 9 mg pour les garçons et de 13 mg pour les filles. Les garçons ont des apports de près du double de la recommandation nationale. En se rappelant que l'apport protidique moyen est très élevé dans notre échantillon et que les protéines d'origine animale sont habituellement de bonnes sources de fer, on peut expliquer cet apport élevé. Les jeunes adultes anglais⁹ ont des apports en fer plus modestes bien que supérieurs aux valeurs recommandées. Ils consomment beaucoup moins de protéines, soit seulement 14 p. cent de leur énergie sous cette forme.

Au chapitre de l'indice de masse corporelle, nos données peuvent être comparées à deux études majeures : l'enquête Promotion Santé Canada¹ et l'enquête Santé Québec.² Dans ces deux cas, comme dans notre étude, le poids et la taille ont été rapportés par les sujets, approche qui tend à sous-estimer le poids. Dans l'étude canadienne, 9 p. cent des individus mâles de 20 à 24 ans ont un indice (IMC) inférieur à 20 comparativement à 41,6 p. cent des individus femelles. L'enquête québécoise rapporte 10,2 p. cent des individus mâles de 20 à 29 ans dans la catégorie d'indice inférieur à 20 et 34,9 p. cent des individus femelles dans cette même catégorie. Notre étude nous révèle des données très semblables pour la catégorie de faible indice soit 8,6 p. cent des garçons et 35,1 p. cent des filles. En ce qui concerne la catégorie de poids souhaitable : IMC 20-25, notre échantillon y comprend davantage d'individus que dans les enquêtes précitées, soit 78,3 p. cent de garçons et 60 p. cent de filles plutôt que 71,3 et 46,3 p. cent (Canada) et 59 et 48,6 p. cent (Québec), respectivement. Par conséquent, on retrouve sensiblement moins de nos étudiants dans la zone d'IMC supérieure à 25, soit 13,1 p. cent de garçons et 4,9 p. cent de filles. Promotion Santé Canada¹ qui rapporte des valeurs plus faibles que Santé Québec² dans cette catégorie, indique néanmoins 19,5 et 11,7 p. cent pour chacun des sexes. On peut se demander si nos étudiants sont davantage préoccupés de leur poids que la population en général. C'est possible. Leur in-

térêt pour consommer des produits laitiers maigres traduit certainement un souci de contrôler leur apport énergétique qu'on a trouvé inférieur aux moyennes nationales recommandées.

L'analyse des données de notre étude quant à l'indice de masse corporelle nous laisse néanmoins avec une interrogation importante. Se pourrait-il que cet indice ne soit pas valide pour une population d'origine asiatique? En effet, notre échantillon a fait ressortir que les deux-tiers des sujets féminins d'origine asiatique se retrouvaient dans la zone inférieure de l'IMC, contre le tiers des sujets d'origine canadienne-française. La situation est inverse pour la zone de 20 à 25 et aucune fille d'origine asiatique n'est dans la zone supérieure à 25 où, néanmoins, 5,3 p. cent de canadiennes-françaises se retrouvent. Il existe certes davantage de canadiennes-françaises qui ont des consommations supérieures aux apports recommandés en calcium. Cependant, plus que la moitié des asiatiques se retrouvent également avec des consommations supérieures. Une faible consommation de calcium ne peut suffire à expliquer un faible indice de masse corporelle pour une telle proportion d'asiatique. On peut donc se demander si l'hérédité ou des caractéristiques génétiques de race peuvent expliquer ce phénomène. Il serait intéressant de pouvoir vérifier pareille hypothèse avec un échantillon plus considérable.

Conclusion

L'analyse de l'alimentation d'étudiants de première année de médecine dentaire nous apprend que la consommation énergétique moyenne est demeurée stable et légèrement inférieure à la moyenne nationale recommandée pour ce groupe d'âge, à la fois pour les garçons comme pour les filles. L'apport lipidique est à peine plus élevé que la recommandation de 30 p. cent de l'énergie. Les apports de protéines, de calcium et de fer dépassent largement les apports canadiens recommandés. Quant à l'apport glucidique, il est plutôt faible. À la catégorie inférieure (< 20) de l'indice de masse corporelle, le pourcentage d'étudiants retrouvé

est comparable à ceux des études Promotion Santé Canada et Santé Québec. Cependant, une plus grande proportion des étudiants dans les études précitées occupe la zone d'indice souhaitable (20-25). Aussi, il est particulièrement intéressant d'observer que la plus grande proportion des filles d'origine asiatique appartient à la catégorie la plus faible de l'indice de masse corporelle. L'hypothèse de non validité de cet indice pour ce groupe est soulevée et nécessitera un échantillon plus considérable pour être confirmée. ■

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D^r Monique Julien est professeure agrégée, département de santé buccale, faculté de médecine dentaire, à l'Université de Montréal.

Les demandes de tirés à part: D^r Monique Julien, département de santé buccale, faculté de médecine dentaire, Université de Montréal, C.P. 6128, succursale A, Montréal (Québec) H3C 3J7.

Bibliographie

1. Santé et Bien-être social Canada. Enquête Promotion, Santé Canada, Rapport technique, Ministère des approvisionnements et services Canada, No de catalogue H39-119/1988F, 1988.
2. Ministère de la santé et des services sociaux. Enquête Santé Québec 1987, Direction des systèmes d'information, Service de diffusion et bureautique, 1990.
3. Brault, Dubuc, M. et Caron, Lahaie, L. *Valeur nutritive des aliments*, 1987.
4. Pennington, J.A.T. *Bowes and Church's food values of portions commonly used*, 15th ed., Philadelphia, J.B. Lippincott Co., 1989.
5. Julien, M. *Évaluation de l'alimentation*, Planif-Santé Inc., 1992.
6. Julien, M. *A new method for the evaluation of cariogenic diets* *J Can Dent Assoc* (soumis), 1993.
7. Troyer, D., Ulrich, I.H., Yeater, R.A. et al. Physical activity and condition, dietary habits, and serum lipids in second-year medical students. *J Amer Coll Nutr* 9(4):303-307, 1990.

8. Santé et Bien-être social Canada. *Recommandations sur la nutrition*. Ministère des approvisionnements et services, 1990.

9. Bull, N.L. Dietary habits of 15 to 25 year old. *Hum Nutr Appl Nutr* 39A:1-68, 1985.

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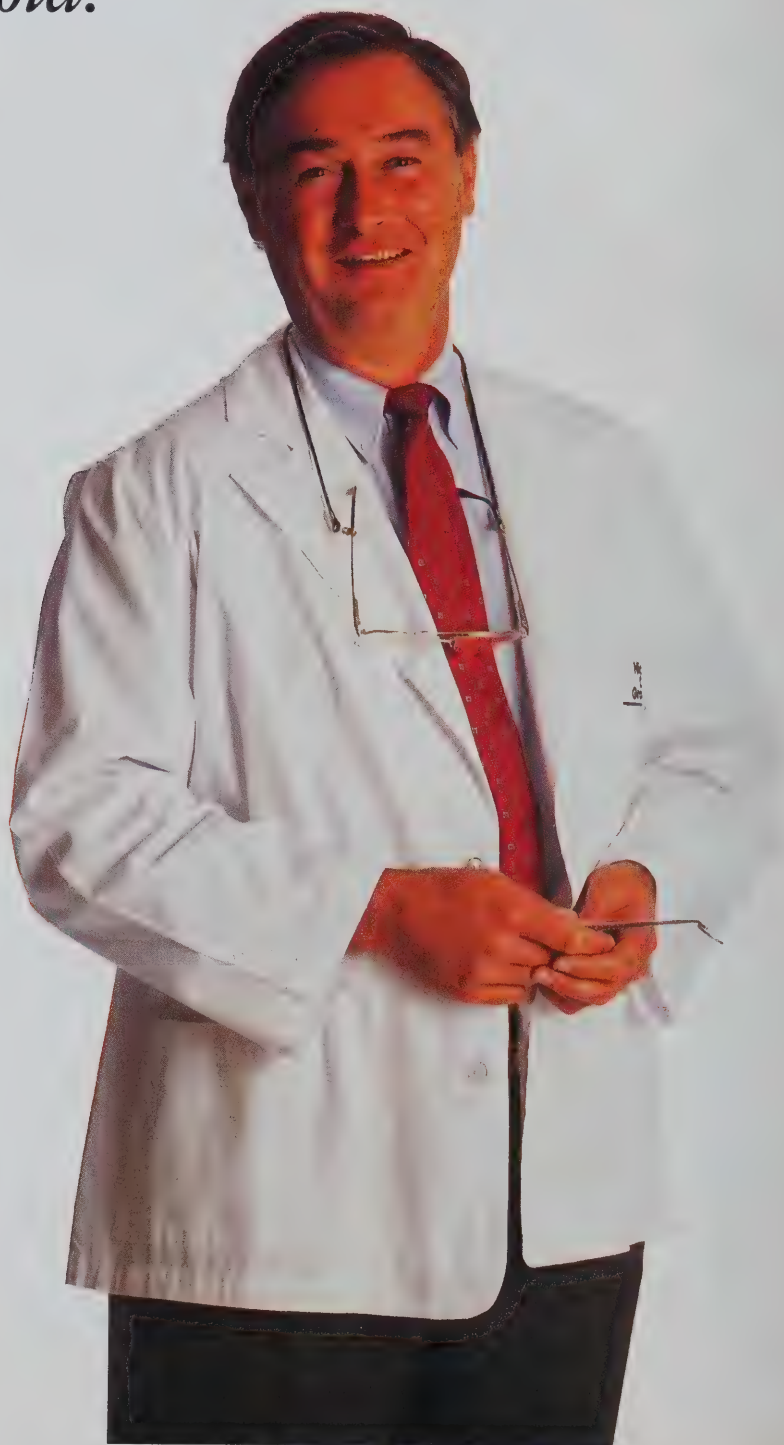
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ANNUAL INDEX

THE JOURNAL OF THE CANADIAN DENTAL ASSOCIATION ANNUAL INDEX Volume 59, Numbers 1-12

The format includes three separate indexes: an author, subject and book review index.
The subject headings have been assigned in accordance with those established by the national Library of medicine.
Each entry is followed by the abbreviated month and the page number in the Journal.

1993 AUTHORS' INDEX

- A**
Allison, C., Aug, 673-82.
- B**
Baltadjian, H., Sep, 774-8.
Barrick, J.A., Mar, 252-6.
Bedford, W.R., Feb, 126-32.
Bohay, R.N., Nov, 931-4.
Brecx, M., Jul, 515-8.
Brown, A., Sep, 749-57.
Brownstone, E., Jul, 615-8.
- C**
Carbery, A., Oct, 841-4.
Carr, M.M., Feb, 180-5.
Christianson, C., Jan, 83-7.
Christie, W.H., Sep, 765-72.
Clark, D.C., Mar, 272-9.
Cooney, P.V., Jun, 544-8.
Crawford, P.R., Feb, 136-8, Jul, 589-91, Sep, 739-44, Nov, 905-6.
Cree, E., Mar, 288-90.
Curro, F.A., Feb, 171-9.
- D**
D'Aguiam, G., Oct, 845-50.
Daley, T., Nov, 931-4, Nov, 935-8.
D'Aoust, P., Jul, 619-22.
Davey, K.W., Feb, 126-32.
Davis, E.R., Jun, 517-21.
Davis, K.L., Sep, 785-6.
Davis, T.L., Mar, 212, Apr, 350.
Dohan, M.J.T., Nov, 907-8.
Duforu, J.P., Apr, 388-402.
Duret, F., May, 445-53.
- E**
Epstein, J., Jan, 83-7, Apr, 351-4.
- F**
Ferguson, J., Mar, 292-300.
Frairs, C.A., May, 465-75.
Freydberg, B., Mar, 218-20.
Friedman, C.S., Nov, 909-12.
- G**
Gagné, G., Aug, 686-92.
Galan, D., Nov, 921-8.
Gardner, D.G., Nov, 929-30.
Gilleskey, S.C., Apr, 377-86, Jul, 615-8.
Gillespie, J., Nov, 947-8.
- H**
Halstrom, L.W., Mar, 248-9.
Hardie, J., Apr, 355-62, Jul, 599-606, Aug, 693-5, Dec, 987-91, 1,000.
Hassard, T.H., Jun, 544-8.
Hawrish, C.E., Sep, 765-72.
Henry, B.M., Dec, 995-6.
Huber, J.S., Dec, 997-1,000.
- I**
Ismail, A., May, 465-75.
- J**
Jastak, J.T., May, 484-6.
Johnson, L.N., Jun, 538-43.
Johnston, D.H., Jun, 528-36.
Jones, D.W., Feb, 155-66, Jul, 592-5.
Jordan, R.E., Jan, 81-4, Feb, 167-70.
Joshi, A., Feb, 171-9.
Judd, P.L., Jun, 528-36.
Julien, M.G., Dec, 1,001-1,005.
- K**
Karlowsky, J., Mar, 292-300.
Katsikeris, N., Sep, 749-57.
Kaugars, G.E., Nov, 935-8.
Kenny, D.J., Jun, 528-36.
- L**
Labrèche, H., Sep, 774-8.
Landry, R.G., Jul, 619-24.
Leake, J.L., Mar, 281-7.
Lepage, Y., Sep, 774-8.
Lewis, D.W., Jan, 62-7, 68-75, 76-9, Mar, 281-7.
Levine, N., Oct, 823-9.
Liebenberg, W.H., Aug, 663-71, Oct, 817-22.
Locker, D., Oct, 830-8, 844.
Lovas, J.G.L., Nov, 935-8.
- M**
MacDonald, L., Jul, 615-8.
MacDonald, R.M., May, 465-75.
MacDonald, S.L., Feb, 171-9.
MacInnis, W.A., May, 465-75.
Malazdrewicz, V.K., Jun, 544-8.
Manji, I., Jan, 23-6, Feb, 115-6, Mar, 239-41, 247, Apr, 344-6, May, 441-2, Jun, 509-11, Jul, 583-4, Aug, 657-8, Sep, 733-5, Oct, 809-11, Nov, 893-6, Dec, 978, 981-2.
Maravelis-Splagounias, L., Feb, 171-9.
Marion, S.A., Apr, 351-4.
Mathias, R., Jan, 83-7, Apr, 351-4.
Matthews, D.C., May, 454-63.
Mayer, L., Nov, 921-8.
McNulty, B., Jan, 58-60.
Miles, D.A., Jun, 517-21.
Miller, M.C., Feb, 110-4.
Miller, T.E., Mar, 252-6.
Milot, P., Sep, 774-8.
Miyajima, K., Feb, 167-70.
Mock, D., Aug, 673-82.
Moffatt, M.E.K., Feb, 117-25.
Moran, R., Feb, 109, Mar, 233-4, Apr, 342-3, Jun, 515, Jul, 585-7, Aug, 659, Sep, 723, Oct, 813-4, Dec, 897-8.
Morency, R., Nov, 929-30.
- N**
Netuschil, L., Jul, 615-8.
Neuman, K.A., Apr, 413-4.
Niedermayer, J.W., Jun, 522-7.
- Noreau, G., Jul, 619-24.**
- O**
Odlum, O., Jan, 133-4.
O'Neil, J., Feb, 117-25.
- P**
Papas, A.S., Feb, 171-9.
Payne, R.G., Jun, 528-36.
Peikoff, M.D., Sep, 765-72.
Podnieks, E., Nov, 915-20.
Porter, J., Mar, 281-7.
Pretara-Spanedda, P., Feb, 171-9.
Provençal, M., Oct, 841-4.
Pruthi, V.K., Apr, 377-86.
- R**
Rea, E., Feb, 117-25.
Rochette, C., Jul, 619-24.
Rhodes, P.R., Jan, 28-9.
Russell, K., Feb, 187-90.
- S**
Sands, T., Sep, 749-57.
Schwartz, A., Feb, 117-25.
Senda, A., Feb, 167-70.
Shirakawa, K., Feb, 167-70.
Sibbald, P., Nov, 909-12.
Sigal, M.J., Oct, 823-9.
Simor, A.E., Aug, 673-82.
Slade, G., Oct, 830-8, 844.
Stockton, H.J., Mar, 242-7.
Stoddart, M., Jul, 615-8.
Suzuki, M., Jan, 81-4, Feb, 167-70.
Swan, E.S.C., Jan, 62-7, 68-75, 76-9.
Symington, O., Sep, 749-57.
- T**
Tenenbaum, M.P., Oct, 861-2.
Tennenbaum, H.C., Aug, 673-82.
Thompson, C., Feb, 117-25.
Touyz, L.Z.G., Jul, 607-10.
Tran, S.D.T., Mar, 288-90.
Turcotte, J-Y., Apr, 388-402.
- W**
Warwick, B., Nov, 950.
White, J.M., Apr, 377-86.
Williams, P.T., Jun, 538-43.
Wong, G.B., Sep, 759-64.
Wright, J.M., Nov, 935-8.
- Y**
Yacobi, R., Feb, 187-90.
Young, E.R., Oct, 845-50.
Young, T.K., Feb, 117-25.
- Z**
Zacharie, J., Jul, 619-24.
Zhanel, G., Mar, 292-300.

SUBJECT INDEX

A

ABORIGINALS

Adult Dental Health In the Keewatin, Feb, 117-25.

Baffin Island - It's Worth a Visit, Feb, 136-7.
Tales of Northern Dentistry, Feb, 133-4.

ACADEMY OF SPORTS DENTISTRY

Feb, 106.

ADENOMA

Adénome pléomorphe, Mar, 288-90.

ADULT

Adult Dental Health In the Keewatin, Feb, 117-25.

ADVERTISING

May, 433.

AGRICULTURE

Pathologies buccales d'une population agricole préhistorique du nord-est américain, Aug, 686-92.

AIDS

AIDS and Dentistry: A Retrospective Analysis of the Florida Case, Dec, 987-91, 1,000

The Causation of Disease: HIV and AIDS, Apr, 351-3.

A Decade of AIDS, and Its Implications For Canadian Dentistry, Jul, 599-606.

ALBERTA DENTAL ASSOCIATION

Executive, Aug, 650.

ALPHA OMEGA MOUNT ROYAL DENTAL SOCIETY

Executive, Nov, 877.

ALZHEIMER'S DISEASE

Down's Syndrome and Alzheimer's Disease, Oct, 823-9.

ANEMIA, SICKLE CELL

Dental Management of Patients with Sickle Cell Anemia, Feb, 180-2.

ANESTHESIA, LOCAL

La seringue auto-aspirante en anesthésie locale, Apr, 388-401.

ANTHROPOLOGY

Pathologies buccales d'une population agricole préhistorique du nord-est américain, Aug, 686-92

AMERICAN COLLEGE OF DENTISTS

Mar, 227.

AMERICAN DENTAL ASSOCIATION

Executive Director, Apr, 329.

ANESTHESIA, DENTAL

Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts, Oct, 845-50.

ANTIBIOTICS -

ADMINISTRATION AND DOSAGE

A Review of Commonly Prescribed Oral Antibiotics in General Dentistry, Mar, 292-300.

ANXIETY

Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts, Oct, 845-50.

APPOINTMENTS

Dunn, W.J., Jan, 16.

Lancis, Brig.-Gen., V.J., Aug, 652.

McDermott, R.E., Sep, 717.

Mock, D., Jan, 15.

AWARDS AND PRIZES

Begin, Brig.-Gen., J.F., Aug, 651, Nov, 886.

Blain, M., Nov, 886.

Chardenoff, M., Nov, 885-6.

Clemenhausen, C., Nov, 886.

Gallant, C., Nov, 886.

Glave, W., Nov, 886.

Goodwin, R., Aug, 650-1.

Gryfe, J., Nov, 886.

Hasan, S., Nov, 886.

Johnson, P., Nov, 886.

King, J., Aug, 650-1.

Koehler, J., Nov, 889.

Li, J., May, 434.

MacLean, A., Nov, 886.

Ozcan, K., Nov, 886.

Peters, D., Aug, 650-1.

Precious, D., Nov, 886.

Robertson, J., Nov, 885-6.

Rocky, B., Nov, 886.

Rosen, H., Nov, 885-6.

Smith, D., May, 433-4.

Speck, J.E., Nov, 886.

Steggles, W., Nov, 886.

Tam, L., May, 434-5.

Thomas, R., Nov, 886.

Turnbull, R., Nov, 886.

Zarb, G., Jul, 573.

B

BACTEREMIA

Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-82.

BACTERIAL INFECTIONS

A Review of Commonly Prescribed Oral Antibiotics in General Dentistry, Mar, 292-300.

BAHAMA ISLANDS DENTAL ASSOCIATION

Feb, 106.

BOWEN, LLOYD

Nov, 905-6.

BRITISH COLUMBIA

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

A Case of a Hepatitis B Infected Practitioner, Jan, 52-7.

C

CAD/CAM

The Practical Dental CAD/CAM in 1993, May 445-51.

CANADA

Appropriate Use Of Fluorides In the 1990s, Mar, 272-9.

Bloodborne Pathogens in the Health Care Setting: Risk of Transmission, Apr, 363

A Decade of AIDS, and Its Implications for Canadian Dentistry, Jul, 599-606.

Elder Abuse and the Dentists' Awareness and Knowledge Of the Problem - A National Survey, Nov, 921-8.

A Macroeconomic Review of Dentistry in the 1980s, Mar, 281-7.

Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

CANADIAN ACADEMY OF ENDODONTICS

Executive, Nov, 878.

CANADIAN ACADEMY OF PERIODONTOLOGY

Executive, Aug, 651.

CANADIAN ASSOCIATION OF DENTAL RESEARCH

May, 434.

CANADIAN ASSOCIATION OF ORTHODONTISTS

Executive, Dec, 970

CANADIAN CONFERENCE ON THE EVALUATION OF CURRENT RECOMMENDATIONS CONCERNING FLUORIDES

Apr, 330-6.

CANADIAN DENTAL ASSOCIATION

CDA Board of Governors Annual Meeting, Nov, 885-6.

CDAnet, Apr, 373-6.

CDHA Statement, Jan, 15.

FDI 1994, Jun, 555.

Lobbyists' Registration Act, Apr, 330.

Meet the Wrens [interview], Sep, 739-44.

Planning Session, Jan, 15, Dec, 972.

President-Elect, Sep, 717.

Retired Membership, Dec, 972.

Teaching Conference, Dec, 975.

Toronto Star, Apr, 329.

Vice-President, Sep, 717.

Working Group on Membership, Nov, 880.

CANADIAN DENTAL ASSOCIATION MEETING

Hosting FDI World Dental Congress, Jun, 555-7, Jul, 612-3, Aug, 684-5, Sep, 736-8, Oct, 856-8, Nov, 944-6, Dec, 984-6.
Toronto 1993: Annual Dental Meeting Update, Jan, 35-48, Feb, 139-53, Mar, 257-71, Apr, 403-4, Jul, 579-582.

CANADIAN DENTAL HYGIENISTS ASSOCIATION

Executive, Sep, 718.

CANADIAN DENTISTS' INSURANCE PROGRAM

Feb, 108.

CANADIAN FORCES DENTAL SERVICES

Jan, 16, Nov, 877-8.

CANADIAN FUND FOR DENTAL EDUCATION

Branemark Cranio-Maxillofacial Rehabilitation Fund, Nov, 882-3.

CFDE Month, Oct, 859-60.

Corporate Sponsorship, Jan, 17-8.

Developing Funds, Jun, 504-5.

Fellowship Awards, Aug, 655-6.

Program Funding, Jul, 575-6.

Teaching Conference, Feb, 108, Dec, 975.

CANADIAN SOCIETY OF PUBLIC HEALTH DENTISTS

Executive, Jul, 574.

CANADIAN STANDARDS ASSOCIATION

Mar, 225.

CASE REPORT

Adénome pléomorphe, Mar, 288-90.

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

Errors In The Diagnosis Of Oral Malignancies, Nov, 935-8.

Fractures of the Zygomatic Complex, Sep, 749-57.

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

The Glandular Odontogenic Cyst, Nov, 929-30.

Osteosarcoma and Fibrous Dysplasia, Nov, 931-4.

Pediatric Mandibular Fractures Treated By Rigid Internal Fixation, Sep, 759-64.

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts, Oct, 845-50.

CDAnet

Apr, 373-6, Jun, 503, Aug, 653.

CDSPI REPORTS [series]

CDSPI is Not an Insurance Company (Let's Talk), Mar, 233-4.

Choosing Insurance in Step With Your Needs, Sep, 723-4.

Decades in Dentistry and the CDA RIF, Nov, 899-902.

HIV Insurance Coverage, Jun, 515.

Insurance and the Associate, Jul, 585-7.

Investigate CDIP's New Cost-Effective Insurance Plan, Apr, 342-3.

Know Your Insurance Options, Feb, 109.

Meeting the Needs of Women in Dentistry, Aug, 659.

A New Corporate Logo (Let's Talk), Oct, 813-4.

Ring In the New Year With Better Financial Planning, Dec, 967-8.

Snapshot of a President, Jan, 33.

CENTERS FOR DISEASE CONTROL (U.S.)

AIDS and Dentistry: A Retrospective Analysis Of the Florida Case, Dec, 987-91, 1,000.

CERTIFIED DENTAL ASSISTANTS SOCIETY OF BRITISH COLUMBIA

Aug, 650.

CHILD

Appropriate Use of Fluorides in the 1990s, Mar, 272-9.

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

Pediatric Mandibular Fractures Treated by Rigid Internal Fixation, Sep, 759-64.

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

Socialized Dentistry for Children in Saskatchewan, Jun, 522-7.

CHILD ABUSE

Child Abuse: Implications for the Dental Health Professional, Nov, 909-12.

CHLORHEXIDINE

Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-82.

COLLEGE OF DENTAL SURGEONS OF BRITISH COLUMBIA

Executive, Oct, 804.

COMPARATIVE STUDY

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

Étude comparative du diamètre des points d'explorateurs dentaires, Sep, 774-5.

Vital Fluorescence: A New Measure of Periodontal Treatment Effect, Jul, 615-8.

COMPOSITE RESINS

Composite Resin Restoratives Revisited, Jun, 538-43.

Early Clinical Evaluation of Four New Bonding Resins used for Conservative

Restoration of Cervical Erosion Lesions, Jan, 81-4.

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

COMPUTER SYSTEMS

Overcoming Computer Phobia, Mar, 218-20.

The Ultimate Dental Office Team Member, Jan, 28-9.

CONGRESSES

1993 FDI World Dental Congress, Nov, 881-82.

1994 FDI World Dental Congress, Jun, 555-7, Jul, 612-3, Aug, 684-5, Sep, 736-8, Oct, 856-8, Nov, 944-6, Dec, 984-6.

Dental Assistants Congress, Sep, 717-8.

D**DENTAL AMALGAM**

Sep, 721-2.

The Whole Truth or Nothing? A Tale of Misinformed Consent, Jul, 592-5.

DENTAL BONDING

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

DENTAL CARE

Baffin Island - It's Worth a Visit, Feb, 136-7.

Indian and Inuit Dental Care in Canada, Feb, 126-32.

A Macroeconomic Review of Dentistry in the 1980s, Mar, 281-7.

Tales of Northern Dentistry, Feb, 133-4.

DENTAL CARE FOR AGED

Oral Health Status and Treatment Needs of an Insured Elderly Population, May, 465-75.

Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

DENTAL CARE FOR DISABLED

Dental Management of Patients with Sickle Cell Anemia, Oct, 180-5.

Down's Syndrome and Alzheimer's Disease, Oct, 823-9.

DENTAL CARIES

Appropriate Use Of Fluorides In the 1990s, Mar, 272-9.

Caries Prevalence In Xerostomic Individuals, Feb, 171-9.

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.

Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.

DENTAL CEMENTS

Two-Year Outcome Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

DENTAL CLINICS

Tales of Northern Dentistry, Feb, 133-4.

DENTAL HEALTH SERVICES

Baffin Island - It's Worth a Visit, Feb, 136-7.

Indian and Inuit Dental Care in Canada, Feb, 126-32.

Socialized Dentistry for Saskatchewan, Jun, 522-7.

DENTAL HEALTH SURVEYS

Adult Dental Health In the Keewatin, Feb, 117-25.

Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

Tales of Northern Dentistry, Feb, 133-4.

DENTAL HIGH-SPEED EQUIPMENT

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

DENTAL IMPLANTS

Osseointegrated Implants: Their Application In Orthodontics, May, 454-63.

DENTAL INSTRUMENTS

Étude comparative du diamètre des pointes d'explorateurs dentaires, Sep, 774-8.

DENTAL OCCLUSION

Computerized Occlusal Analysis, Aug, 701.

DENTAL PLAQUE

Vital Fluorescence: A New Measure of Periodontal Treatment Effect, Jul, 615-8.

DENTAL PORCELAIN

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

DENTAL PULP

The Effectiveness of the Nd:YAG Laser in the Treatment of Dental Hypersensitivity, Apr, 377-86.

DENTAL PULP CAVITY

Clinical Observations On A Newly Designed Electronic Apex Locator, Sep, 765-71.

DENTAL RESTORATION, PERMANENT

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

Composite Resin Restoratives Revisited, Jun, 538-43.

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

DENTAL SCALING

Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-682.

Vital Fluorescence: A New Measure of Periodontal Treatment, Jul, 615-8.

DENTAL SERVICE, HOSPITAL

Dec, 975

DENTAL STAFF

A Decade of AIDS, And Its Implication For Canadian Dentistry, Jul, 599-606.

DENTAL VENEERS

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.

DENTIFRICES

Appropriate Use Of Fluorides in the 1990s, Mar, 272-9.

DENTIN-BONDING AGENTS

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

DENTIN SENSITIVITY

The Effectiveness of the Nd:YAG Laser in the Treatment of Dental Hypersensitivity, Apr, 377-86.

DENTIST-PATIENT RELATIONS

The New Patient Experience, Jan, 23-6.

DENTISTRY

Tales of Northern Dentistry, Feb, 133-4.

DENTISTS

AIDS and Dentistry: A Retrospective Analysis Of The Florida Case, Dec, 987-91, 1,000.

DENTISTS, WOMEN

Meeting the Needs of Women in Dentistry, Aug, 659.

DENTURE DESIGN

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

DENTURE, PARTIAL

Un Cas d'Ingestion de Prothèse Mandibulaire Partielle, Oct, 841-3.

DENTURE, PARTIAL, FIXED

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

DMF INDEX

Adult Dental Health In the Keewatin, Feb, 117-25.

DRUGS, NON-PRESCRIPTION

Caries Prevalence In Xerostomic Individuals, Feb, 171-9.

E

ECONOMICS, DENTAL

A Macroeconomic Review of Dentistry in the 1980s, Mar, 281-7.

EDITORIAL

Aboriginals' Dental Health, Feb, 99.

CDA Journal and Communiqué, Mar, 212.

Education, Dental, Continuing, Feb, 101.

Ethics, Dental, Aug, 641, Oct, 797.

HIV and AIDS, Aug, 693.

Illiteracy, Apr, 325.

Infection Control, Apr, 350.

Laughter, Jul, 569.

Licensure, Dental, May, 484-6.

Membership, Nov, 950.

Planning Session, Dec, 959.

Professionalism, Jun, 495.

Smoking, May, 425.

Socialized Dentistry, Oct, 861-2.

Spouse Abuse, Nov, 947-8.

Students, Dental, Mar, 215.

Taking Care of Business, Sep, 715.

Technology, Dental, Jan, 9.

Violence, Nov, 873.

EDMONTON AND DISTRICT DENTAL SOCIETY

Executive, Nov, 877.

EDUCATION, DENTAL

Staff/Student Relations: Building the Trust, Sep, 785-6.

EDUCATION, DENTAL, CONTINUING

Aug, 648, Sep, 711.

Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.

ELDER ABUSE

Elder Abuse and the Dentists' Awareness and Knowledge Of the Problem - A National Survey, Nov, 921-8.

Elder Abuse and Neglect: A Concern for the Dental Profession, Nov, 915-920.

EMBLEMS AND INSIGNIA

A New Corporate Logo (Let's Talk), Oct, 813-4.

ENVIRONMENTAL POLLUTANTS

The Enigma of Amalgam in Dentistry, Feb, 155-66.

EQUIPMENT STERILIZATION

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

ESOPHAGUS

Un Cas d'Ingestion de Prothèse Mandibulaire Partielle, Oct, 841-3.

ETHICS, DENTAL

The Whole Truth or Nothing? A Tale of Misinformed Consent, Jul, 592-5.

ETHIDIUM

Vital Fluorescence: A New Measure of Periodontal Treatment Effect, Jul, 615-8.

EVALUATION STUDIES

Early Clinical Evaluation of Four New Bonding Resins used for Conservative Restoration of Cervical Erosion Lesions, Jan, 81-4.

F

FACULTY, DENTAL

Staff/Student Relations: Building the Trust, Sep, 785-6.

FÉDÉRATION DENTAIRE INTERNATIONAL

Jan, 15-6.

1993 FDI World Dental Congress, Nov, 881-2.

1994 FDI World Dental Congress, Jun, 555-7, Jul, 612-3, Aug, 684-5, Sep, 736-8, Oct, 856-8, Nov, 944-6, Dec, 984-6.

FEDERATION OF SPECIAL CARE ORGANIZATIONS

Feb, 107, Jul, 573-4.

FIBROUS DYSPLASIA, MONOSTOTIC

Osteosarcoma and Fibrous Dysplasia, Nov, 931-4.

FINANCIAL MANAGEMENT

Decades in Dentistry and the CDA RIF, Nov, 899-902.

Ring In the New Year With Better Financial Planning, Dec, 967-8.

State of Affairs: Examining Your Financial Status, Dec, 978, 981-2.

FLORIDA

AIDS and Dentistry: A Retrospective Analysis Of the Florida Case, Dec, 987-91, 1,000.

FLUORIDES

Apr, 330-6, Oct, 804.

Appropriate Use Of Fluorides In the 1990s, Mar, 272-9.

FLUORIDES, TOPICAL

Appropriate Use of Fluorides In the 1990s, Mar, 272-9.

FLUORESCINS

Vital Fluorescence: A New Measure of Periodontal Treatment Effect, Jul, 615-8.

FLUORIDATION

Sep, 722, Apr, 330-6, Nov, 877.

Bowen, Lloyd, Nov, 905-6.

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

FOLLOW-UP STUDIES

Two-Year Outcome Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

FORENSIC DENTISTRY

May, 434.

FRAUD

Dec, 970.

G

GERMANY

The Enigma of Amalgam in Dentistry, Feb, 155-66.

GINGIVITIS

Vital Fluorescence: A New Measure of Periodontal Treatment Effect, Jul, 615-8.

GLOVES, SURGICAL

Feb, 185, Aug, 650, Nov, 882.

GUIDELINES

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.

H

HALITOSIS

Oral Malodor, Jul, 607-10.

HEAD PROTECTIVE DEVICES

Dec, 971.

HEALTH EXPENDITURES

A Macroeconomic Review of Dentistry in the 1980s, Mar, 281-7.

HEALTH PERSONNEL

Bloodborne Pathogens in the Health Care Setting: Risk of Transmission, Apr, 363-70.

HEALTH POLICY

Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.

HEALTH SERVICES NEEDS AND DEMANDS

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

Indian and Inuit Dental Care in Canada, Feb, 126-32.

HEALTH AND WELFARE CANADA

Health Protection Branch, Jan, 17.

HEPATITIS B

A Case of a Hepatitis B Infected Practitioner, Jan, 52-7.

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

HEPATITIS B - TRANSMISSION

Bloodborne Pathogens in the Health Care Setting: Risk of Transmission, Apr, 363-70.

HISTORY OF DENTISTRY

50 Years Ago - Rescue On The High Seas, Nov, 907-8.

HI-TECH/HI-CARE DENTISTRY

Computer Applications in the Diagnosis and Monitoring of Computerized Occlusal Analysis, Aug, 701.

Electronic Imaging in the Dental Office, Jun, 517-521.

New Vistas in Communication, Apr, 413-4.

Overcoming Computer Phobia, Mar, 218-20.

Periodontal Disease, Feb, 110-4.

The Practical Dental CAD/CAM in 1993, May, 445-53.

The Ultimate Dental Office Team Member, Jan, 28-9.

HIV INFECTIONS

Jul, 573.

AIDS and Dentistry: A Retrospective Analysis Of the Florida Case, Dec, 987-91, 1,000.

A Case of a Hepatitis B Infected Practitioner, Jan, 52-7.

The Causation of Disease: HIV and AIDS, Apr 351-3.

A Decade of AIDS, and Its Implications For Canadian Dentistry, Jul, 599-600.

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

HIV INFECTIONS - TRANSMISSION

Bloodborne Pathogens in the Health Care Setting: Risk of Transmission, Apr, 363-70.

HOMOSEXUALITY

A Decade of AIDS, and Its Implication For Canadian Dentistry, Jul, 599-606.

HYPOPHOSPHATASIA

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

I

IMAGE PROCESSING

New Vistas in Communication, Apr, 413-5.

INCISOR

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

INCOME TAX

Planning for Income Tax, Jan, 58-60.

INDIANS, NORTH AMERICAN

Pathologies buccales d'une population agricole préhistorique du nord-est américain, Aug, 686-92.

INFECTION CONTROL

Bloodborne Pathogens in the Health Care Setting: Risk of Transmission, Apr, 363-70.

The Causation of Disease: HIV and AIDS, Apr, 351-3.

A Decade of AIDS, and Its Implications For Canadian Dentistry, Jul, 599-606.

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

INFORMED CONSENT

The Whole Truth or Nothing? A Tale of Misinformed Consent, Jul, 592-5.

INSURANCE

CDSPI is Not an Insurance Company, Mar, 233-4.

Choosing Insurance in Step With Your Needs, Sep, 723-4.

Investigate CDIP's New Cost-Effective Insurance Plan, Apr, 342-3.

Know Your Insurance Options, Feb, 109.

INSURANCE, DENTAL

Oral Health Status and Treatment Needs of an Insured Elderly Population, May, 465-75.

INSURANCE, HEALTH

HIV Insurance Coverage, Jun, 515.

INVESTMENTS

Planning for Income Tax, Jan, 58-60.

J

JOURNAL DENTAIRE DU QUÉBEC

Nov, 878-80.

K

KELLS, C. EDMUND JR.

Sep, 718-9.

L

LAMINA DURA

Quantification Of the Lamina Dura, Dec, 997-1,000.

LASERS

Mar, 225.

The Effectiveness of the Nd:YAG Laser in the Treatment of Dental Hypersensitivity, Apr, 377-86.

LETTERS

Aboriginals' Dental Health, Adam, H.M., May, 429.

Aboriginals' Dental Health, Hill, W.J., May 429.

Aboriginals' Dental Health, Lewis, M., May, 429-30.

Aboriginals' Dental Health, Uswak, G.S., Apr, 320

Annual Review, Eisner, J., Jan, 8.

CDA Access Ads, Skuba, L.J., May, 430.

CDA Journal, Shupe, L., Aug, 644.

CDA Journal and Communiqué, Carlyle, T.D., May 430.

CFDE Annual Report, Thompson, G., May, 432.

Communication, Hicks, T.W., Jan, 8.

Dental Amalgam, Sutherland, J.K., May, 430.

Dental Equipment, LaDelpha, P., Nov, 876.

Dental Materials, P. Larose, Oct, 800.

Dentifrices, Nikiforuk, G., Oct, 800.

Dolansky, Dr. B., Miller, M.P., Nov, 876.

Dolansky, Dr. B., Mitchell, E.S., May, 432.

Fees, Dental, Lang, M.R., Jun, 500.

Fees, Dental, Wolch, I., Jun, 498.

Fees, Dental, Wyman, J.J., Jun, 499-500.

Helmets, Freudman, N., Jul, 576.

Infection Control, Black, K.M. Jun, 500.

Infection Control, Epstein, J., Aug, 644.

Infection Control, Sussel, W.H., Mar, 319.

Insurance, Dental, Holmes, K.F., Aug, 644.

Licensure, Dental, Roda, R.S., Jul, 576.

Licensure, Dental, Ruprecht, A., Sep, 710.

Malpractice Insurance, R.M. Beyers, Oct, 800

Orthodontic Appliances, Lear, C.S.C., Jan, 7.

Past Presidents, Reid, J.F., Jan, 8.

Pediatric Dentistry, Diamond, R.E., Feb, 104.

Quirks and Quarks, Gauger, G.E., Sep, 710-1.

Radiography, Dental, Poyton, H.G., Feb, 104.

Response: Communication, Dolansky, B., Jan, 8.

Response: Infection Control, Hardie, J., Mar, 319-20.

Response: Quirks and Quarks, Hardie, J., Sep, 711.

Response: Radiography, Dental, Stephens, R.G. & Kogon, S.L., Feb, 104.

Spiramycin, Hohn, F.I., May, 430-2.

Socialized Dentistry, Farrel, N.A., Sep, 710.

Toronto Star, Phillips, E., Jun, 498.

LIBRARY

Breast Feeding, Bottle Feeding and Dental Caries, Oct, 806.

Cracked Tooth Syndrome, May, 483.

Dental Porcelain and Ceramic Crowns and Bridges, Mar, 210.

Dentin Bonding, Jun, 506.

Eating Disorders, Dec, 964.

Electronic Dental Anesthesia, Apr, 402.

Latex Allergies, Feb, 194.

Rubber Dams, Aug, 649.

Stress in Dental Practice, Sep, 730.

Third Molar Removal, Jul, 578.

Xerostomia, Jan, 27.

Violence, Nov, 880, 902.

LOBBYISTS' REGISTRATION ACT

Apr, 330.

M

MADDISON, LEE

Lee Maddison Retires [interview], July, 589-91.

MALOCCLUSION

Osseointegrated Implants: Their Application In Orthodontics, May, 454-63.

MANDIBULAR FRACTURES

Pediatric Mandibular Fractures Treated By Rigid Internal Fixation, Sep, 759-64.

MANDIBULAR NERVE

Successful Mandibular Anesthesia Following Numerous Unsuccessful Attempts, Oct, 845-50.

MANITOBA

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun, 544-8.

MANITOBA DENTAL ASSOCIATION

Executive, Mar, 227.

MARKETING OF HEALTH SERVICES

The Do's and Don'ts of Marketing, Aug, 657-8.

Quality Service and a Personal Touch, Feb, 115-6.

MATERIALS TESTING

Composite Resin Restoratives Revisited, Jun, 538-43.

MAXILLA

The Fourth Canal: Its Incidence In Maxillary First Molars, Dec, 995-6.

MERCURY

The Enigma of Amalgam in Dentistry, Feb, 155-66.

The Whole Truth or Nothing? A Tale of Misinformed Consent, Jul, 592-5.

MILITARY DENTISTRY

50 Years Ago - Rescue On The High Seas, Nov, 907-8.

MINOCYCLINE

La Minocycline, Jul, 619-22.

MIXED SALIVARY GLAND TUMOR

Adénome pléomorphe, Mar, 288-90.

MOLAR

The Fourth Canal: Its Incidence In Maxillary First Molars, Dec, 995-6.

MONTREAL DENTAL CLUB

Executive, Sep, 718.

MOTTLED ENAMEL

Appropriate Use Of Fluorides In the 1990s, Mar, 272-9.

MOUTH DISEASES

A Review of Commonly Prescribed Oral Antibiotics in General Dentistry, Mar, 292-300.

MOUTH, EDENTULOUS

Oral Health Status and Treatment Needs of an Insured Elderly Population, May 465-75.

MOUTH NEOPLASMS - DIAGNOSIS

Errors In The Diagnosis Of Oral Malignancies, Nov, 935-8.

MOZAMBIQUE

Mar, 224.

N

NATIONAL DENTAL EXAMINING BOARD

Executive Director/Registrar, Dec, 975.

NEWFOUNDLAND DENTAL ASSOCIATION

Executive, Aug, 650-1.

NORTHWEST TERRITORIES

Adult Dental Health In the Keewatin, Feb, 117-25.

Tales of Northern Dentistry, Feb, 133-4.

NUTRITION

Alimentation des étudiants de médecine dentaire à leur entrée à l'université, Dec, 1,001-5.

O

OBITUARIES

Archambault, C., Aug, 656.

Asselin, R.D., Jun, 505.

Barker, H.E., Jun, 505.

Bazerman, A.W., Dec, 976.

Beauregard, J., Dec, 976.

Bleakley, R.D., Mar, 230.

Boyes, M.G., Dec, 976.

Brown, D.F., Mar, 230.

Brown, J.M., Dec, 976.

Chagon, Dr. F., Aug, 656.

Christensen, M.H., Dec, 976.

Coletti, B., Dec, 976.

Connor, D.G., Apr, 336.

Connor, R.A., Nov, 883.

Cormier, G.A., Dec, 976.

Crich, A., Sep, 718.

Crutchfield, C., Dec, 976.

Dewis, G.M., Aug, 653.

Downer, W.J., Dec, 976.

Epp, E.J., Apr, 336.

Fast, D.H., Mar 230.

Fedorak, G.G., Nov, 883.

Galbraith, R.H., Mar, 230.

Granove, S., Dec, 976.

Jameson, C.B., Mar, 230.
Jones, T.E., Dec, 976.
Harvold, E.P., Apr, 329.
Hirschberg, N., Jun, 505.
Jackson, J., Aug, 656.
Kerby, J.R., Dec, 976.
King, J.J., Dec, 970.
Lachapelle, J.P., Aug, 656.
Lamping, J.D., Nov, 883.
Lapointe, B., Dec, 976.
Leggett, G.D., Apr, 336.
Lukas, J.E., Dec, 976.
Madronich, W.G., Mar, 230.
Margoese, S., Mar, 230.
Martin, W.K., Dec, 976.
McClintock, J.P., Aug, 656.
Merrell, J.H., Jun, 505.
Mills, F.S., Dec, 977.
Milne, G., Dec, 977.
Mraz, G.J., Mar, 230.
Ochitwa, Y., Nov, 883.
O'Hara, A.W., Dec, 977.
Partridge, R.E., Apr, 336.
Quigley, W.A., Nov, 883.
Rasky, N.B., Nov, 883.
Sadler, E.W., Dec, 977.
Smith, E.F., Dec, 977.
Stibbs, G., Oct, 803.
Tetz, D.F., Mar, 230.
Turner, J.W., Dec, 977.
Utlas, O., May, 433.
Washington, L.A., Nov, 883.
Williams, D., May, 433.
Willmott, G.W., Dec, 977.
Wilson, B., Aug, 656.
Wright, D.V., Dec, 977.

ODONTOGENESIS IMPERFECTA

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

ODONTOGENIC CYSTS

The Glandular Odontogenic Cyst, Nov, 929-30.

ONTARIO

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.
Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.
Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.
Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

ONTARIO ASSOCIATION OF ORTHODONTICS

Executive, Jun, 503.

ORAL HEALTH

Adult Dental Health In the Keewatin, Feb, 117-25.
Comparison of the Dental Status of Six-Year-Old Children in Manitoba, Jun, 544-8.
Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

Oral Health Status and Treatment Needs of an Insured Elderly Population, May, 465-75.

ORAL HYGIENE

Adult Dental Health In the Keewatin, Feb, 117-25.

ORAL MANIFESTATIONS

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

ORGANIZATIONAL POLICY

A Case of A Hepatitis B Infected Practitioner, Jan, 52-7.

ORTHODONTICS, CORRECTIVE

Application of Porcelain Veneers Following Orthodontic Treatment, Feb, 167-9.
Osseointegrated Implants: Their Application In Orthodontics, May, 454-63.

OSSEOINTEGRATION

Osseointegrated Implants: Their Application In Orthodontics, May, 454-63.

OSTEOSARCOMA

Osteosarcoma and Fibrous Dysplasia, Nov, 931-4.

OWNERSHIP

Fear Not: Practice Buy Ins, May, 441-2.

P

PALATAL NEOPLASMS

Adénome pléomorphe, Apr, 288-90.

PARTNERSHIP PRACTICE, DENTAL

An Associate - The Beginning, Mar, 248-9.
Compensating Associates, Apr, 344-6.
Economics of the Associate, Mar, 239-41, 247.
Insurance and the Associate, Jul, 585-7.

PARTNERSHIP PRACTICE, DENTAL - LEGISLATION & JURISPRUDENCE

Restrictive Covenants, Mar, 242-7.

PAMPHLETS

Patient Brochures, Jul, 583-4.

PERIODICALS

Patient Newsletters: The Debate Continues, Jun, 509-11.

PERIODONTAL DISEASES

La Minocycline, Jul, 619-22.
Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.
Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-82.
Vital Fluorescence: A New Measurement of Periodontal Treatment Effect, Jul, 615-8.

PERIODONTAL DISEASES - DIAGNOSIS - THERAPY

Computer Applications in the Diagnosis and Monitoring of Periodontal Disease, Feb, 110-1.

PERSONNEL SELECTION

An Associateship - The Beginning, Mar, 248-9.

PHOTOGRAPHY

Jun, 504.

POLYETHYLENES

Pediatric Trauma and Polyethylene Reinforced Composite Partial Denture Replacements, Mar, 252-6.

PRACTICE MANAGEMENT, DENTAL

Nov, 878.

Achieving Success: Moving Beyond the Comfort Level, Oct, 809-11, Nov, 893-6.
An Associateship - The Beginning, Mar, 248-9.

Determining Your Practice's Business Value, Sep, 733-4.

Planning for Income Tax, Jan, 58-60.

Restrictive Covenants, Mar, 242-7.

PRACTICE MANAGEMENT & SUCCESS [series]

Achieving Success: Moving Beyond the Comfort Level, Oct, 809-11, Nov, 893-6.
Compensating Associates, Apr, 344-6.
Determining Your Practice's Business Value, Sep, 733-5.
The Do's and Don'ts of Marketing, Aug, 657-8.
Economics of the Associate, Mar, 239-41, 247.

Fear Not: Practice Buy Ins, May, 441-2.

The New Patient Experience, Jan, 23-6.

Patient Brochures, Jul, 583-4

Patient Newsletters, Jun, 509-11.

Quality Service and a Personal Touch, Feb, 115-6.

State of Affairs: Examining Your Financial Status, Dec, 978, 982-3.

PRESCRIPTIONS, DRUG

Caries Prevalence In Xerostomic Individuals, Feb, 171-9.

PRESIDENTS COLUMN

Chlorzoin, Nov, 875.

Fees, Dental, Apr, 327.

Fraud, Dec, 961.

Infection Control, Mar, 217.

Insurance Benefits, Jun, 497.

Meetings, Jul, 571.

Membership, Jan, 11, May, 427, Oct, 799.

Professionalism, Feb, 103.

Reflections, Aug, 643.

PREVENTIVE DENTISTRY

Adult Dental Health In the Keewatin, Feb, 117-25.

PRIVITIZATION

Socialized Dentistry for Children in Saskatchewan, Jun 522-7.

PROFESSIONAL IMPAIRMENT

A Case of a Hepatitis B Infected Practitioner, Jan, 52-7.

PULPECTOMY

Two-Year Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

Q

QUALITY OF LIFE

Oral Health and the Quality of Life Among Older Adults, Oct, 830-8, 844.

QUEBEC DENTAL ACADEMY

Executive, Mar, 228.

QUEBEC DENTAL SURGEONS ASSOCIATION

Executive, Dec, 972.

QUESTIONNAIRES

Elder Abuse and the Dentists' Awareness and Knowledge Of the Problem - A National Survey, Nov, 921-8.

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.

Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.

R

RADIOGRAPHY, BITEWING

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

RADIOGRAPHY, DENTAL

Electronic Imaging in the Dental Office, Jun, 517-21

Osteosarcoma and Fibrous Dysplasia, Nov, 931-4.

Quantification Of the Lamina Dura, Dec, 997-1,000.

RADIOGRAPHY, DENTAL - UTILIZATION

Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.

Ontario Dentists: Radiologic Practices and Opinions, Jan, 62-7.

RADIOGRAPHY, PANORAMIC

Ontario Dentists: Radiographs Prescribed In General Practice, Jan, 76-9.

RETIREMENT

Ambrose, E.R., Aug, 653.

Begin, Brig.-Gen., J.F., Aug, 652.

Kravis, G., Dec, 975.

Smith, D., Jul, 573.

RETROSPECTIVE STUDIES

AIDS and Dentistry: A Retrospective Analysis Of the Florida Case, Dec, 987-91, 1,000.

RISK FACTORS

A Decade of AIDS, and Its Implications For Canadian Dentistry, Jul, 599-606.

ROOT CANAL THERAPY

The Fourth Canal: Its Incidence In Maxillary First Molars, Dec, 995-6.

Two-Year Outcome of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

ROOT CANAL THERAPY - INSTRUMENTATION

Access and Isolation Problem Solving in Endodontics: Anterior Teeth, Aug, 663-71.

Access and Isolation Problem Solving in Endodontics: Posterior Teeth, Oct, 817-22.

Clinical Observations On A Newly Designed Electronic Apex Locator, Sep, 765-71.

ROOT CARIES

Caries Prevalence in Xerostomic Individuals, Feb, 171-9.

ROOT PLANING

Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-82.

ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO

Oct, 804-5.

ROYAL COLLEGE OF DENTISTS OF CANADA

Feb, 107.

RUBBER DAMS

Access and Isolation Problem Solving in Endodontics: Anterior Teeth, Aug, 663-71.

Access and Isolation Problem Solving in Endodontics: Posterior Teeth, Oct, 817-22.

S

SALIVA

Caries Prevalence In Xerostomic Individuals, Feb, 171-9.

SASKATCHEWAN

Socialized Dentistry for Children in Saskatchewan, Jun, 522-7.

SCHOOL HEALTH SERVICES

Socialized Dentistry for Children in Saskatchewan, Jun, 522-7.

SOCIOECONOMIC FACTORS

Comparison of the Dental Health Status of Six-Year-Old Children in Manitoba, Jun 544-8.

STATE DENTISTRY

Socialized Dentistry for Children in Saskatchewan, Jun, 522-7.

STERILIZATION

Handpiece Sterilization - The Debate Continues, Apr, 355-62.

STUDENTS, DENTAL

Alimentation des étudiants de médecine dentaire à leur entrée à l'université, Dec, 1,001-5.

Staff/Student Relations: Building the Trust, Sep, 785-6.

SUBSTANCE ABUSE

Mar, 224.

SWEDEN

The Enigma of Amalgam in Dentistry, Feb, 155-66.

SYRINGES

La seringue auto-aspirante en anesthésie locale, Apr, 388-401.

T

TAXES

Planning for Income Tax: A Case Study, Jan, 58-60.

TOOTH, DECIDUOUS

Two-Year Outcome Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

TOOTH EXFOLIATION

Generalized Odontodysplasia Concomitant with Mild Hypophosphatasia, Feb, 187-90.

TOOTH LUXATION

Pediatric Trauma and Polyethylene Reinforced Composite Fixed Partial Denture Replacements, Mar, 252-6.

TOOTH ROOT

Clinical Observations On A Newly Designed Electronic Apex Locator, Sep, 765-71.

The Fourth Canal: Its Incidence In Maxillary First Molars, Dec, 995-6.

TOOTHPASTE

Aug, 650.

TRUTH DISCLOSURE

The Whole Truth or Nothing? A Tale of Misinformed Consent, Jul, 592-5.

U

UKRAINE

Mar, 225.

ULTRASONICS

Prosol-Chlorhexidine Irrigation Reduces the Incidence of Bacteremia During Ultrasonic Scaling, Aug, 673-82.

UNITED STATES

Ontario Dentists: Bitewing Utilization and Restorative Treatment Decisions, Jan, 68-75.

UNIVERSITY OF ALBERTA

Feb, 105.

UNIVERSITY OF LAVAL

Mar, 228.

UNIVERSITY OF SASKATCHEWAN

May, 435-6.

UNIVERSITY OF TORONTO

Feb, 107.

V

VOLUNTEER DENTISTRY

Mar, 225.

W

WENN, RAYMOND

Meet the Wenns [interview], Sep, 739-44.

WORLD HEALTH ORGANIZATION

May, 435.

X

XEROSTOMIA

Caries Prevalence In Xerostomic Individuals, Feb, 171-9.

Z

ZINC OXIDE-EUGENOL CEMENT

Two-Year Outcome Study of Zinc Oxide-Eugenol Root Canal Treatment for Vital Primary Teeth, Jun, 528-36.

ZYGOMATIC FRACTURES

Fractures of the Zygomatic Complex, Sep, 749-57.

BOOK REVIEW INDEX

B

Babbush, C.A., editor, *Dental Implants: Principles and Practice*, reviewed by J.N. Walton, Jan, 20.

Bergamini, M. and Prayer Galletti, S., *Pathophysiology of Head and Neck Musculoskeletal Disorders*, reviewed by D. Precious, Jul, 577.

Blinkhorn, A.S. and Mackie, I.C., *Practical Treatment Planning for the Paedodontic Patient*, reviewed by V. Légault, Aug, 647-8.

D

Dionne, R.A. and Phero, J.C., editors, *Management of Pain and Anxiety in Dental Practice*, reviewed by E.R. Young, Dec, 904, 977.

F

Faust, R.J., editor, *Anesthesiology Review*, reviewed by E.R. Young, Jun, 516.

I

Ide, Y. and Nakazawa, K., *Anatomical Atlas of the Temporomandibular Joint*, reviewed by B. Liebgott, Mar, 235-6.

K

Kaplan, A.S. and Assael, L.A., *Temporomandibular Disorders, Diagnosis and Treatment*, reviewed by B. Blasberg, Dec, 904.

Klatell, J., Kaplan, A.S. and Williams, G. Jr., *The Mount Sinai Medical Center Family Guide to Dental Health*, reviewed by D.W. Johnston, Feb, 196-7.

Korson, D., *Natural Ceramics*, reviewed by H.J. Maier, May, 439.

Korson, D., *Replications of Anterior Teeth in the Four Seasons of Life*, reviewed by H.J. Maier, May, 440.

L

Lachman, S.J., *The Emergent Reality of Heterosexual HIV/AIDS*, reviewed by L.Z.G. Touyz, Feb, 197.

Lammie, G.A., *The Aetiology of the Dental Diseases*, reviewed by J.H.P. Main, Sep, 728.

Laney, W.R. and Tolman, D.E., *Tissue Integration in Oral, Orthopedic and Maxillofacial Reconstruction*, reviewed by J.N. Walton, Mar, 235.

M

McNeill, C., editor, *Current Controversies in Temporomandibular Disorders*, reviewed by Main, J.P.H., Aug, 647.

McNeill, C., editor, *Temporomandibular Disorders: Guidelines for Classification, Assessment and Management*, reviewed by G.K.B. Sandor, Nov, 904.

R

Root-Bernstein, R.S., *Rethinking AIDS, The Tragic Cost of Premature Consensus*, reviewed by J. Hardie, Sep, 728-9.

Rozovsky, L.E. and Rozovsky, F.A., *AIDS and Canadian Law*, reviewed by W.J. Dunn, Apr, 337-8.

S

Sarnat, B.G. and Laskin, D.M., *The Temporomandibular Joint: A Biological Basis for Clinical Practice*, 4th ed., reviewed by J.H.P. Main, Jan, 19.

Schlotzhauer, V., Banks, M.A., Riddick, F.M. and Stipp, J.R., *Parliamentary Opinions II - Solutions to Problems of Organizations*, reviewed by W.E. Dunn, Feb, 196.

Shosenberg, J.W., *The Rise of the Ontario Dental Association*, reviewed by P.R. Crawford, Apr, 337.

Simonson, R.J., *Dentistry in the 21st century: A Global Perspective*, reviewed by A.I. Ismail, Jan, 19-20.

Stockdale, C.R., *Endodontic Surgery*, reviewed by H.M. Fogel, Oct, 815.

T

Tronstad, L., *Clinical Endodontics*, reviewed by W.H. Christie, May, 439.

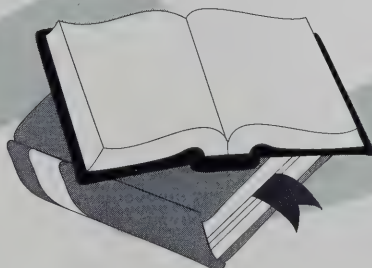
V

van der Waal, I., *Diseases of the Jaws - Diagnosis and Treatment*, reviewed by J.H.P. Main, Oct, 815-6.

W

Wilkins, R.L., Sheldon, R.L. and Krider Jones, S., *Clinical Assessment in Respiratory Care*, reviewed by E.R. Young, Nov, 904, 912.

Wilson, T.G., Kornman, K.S. and Newman, M.G., *Advances in Periodontics*, reviewed by M.M. Fitch, Jun, 516.



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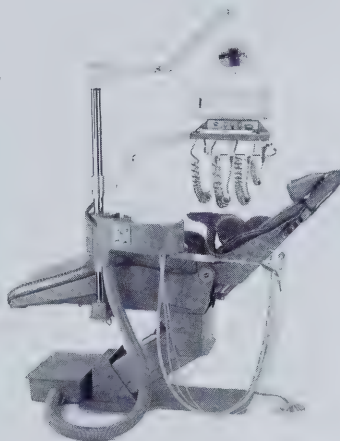
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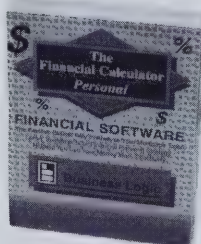
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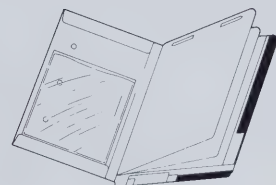
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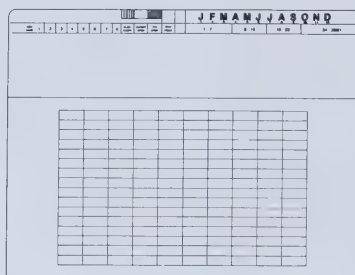
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CDA Membership	983
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CDA RSP	968
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³ Steven E. Duke, D.D.S., M.S.D., University of Texas Health Science Center, San Antonio, Clinical Evaluation of Prisma Universal Bond 3 Adhesive System.

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